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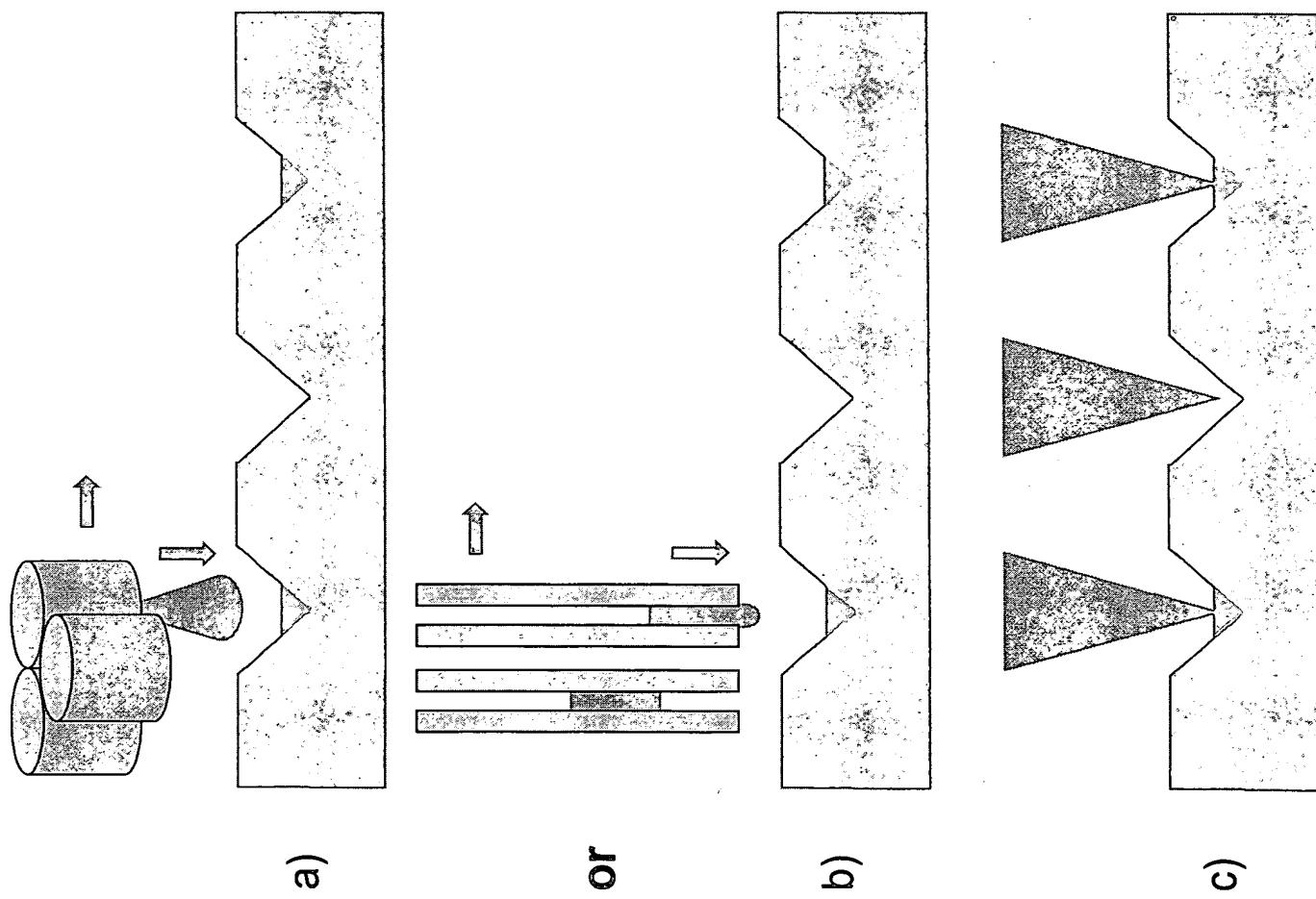
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Title: METHODS AND APPARATUS FOR  
INK DELIVERY TO  
NANOLITHOGRAPHIC PROBE SYSTEMS  
Inventor(s): Sylvain CRUCHON-DUPEYRAT  
Appl. No.: UNASSIGNED  
Atty. Dkt. No.: 083847-0203

Fig. 1



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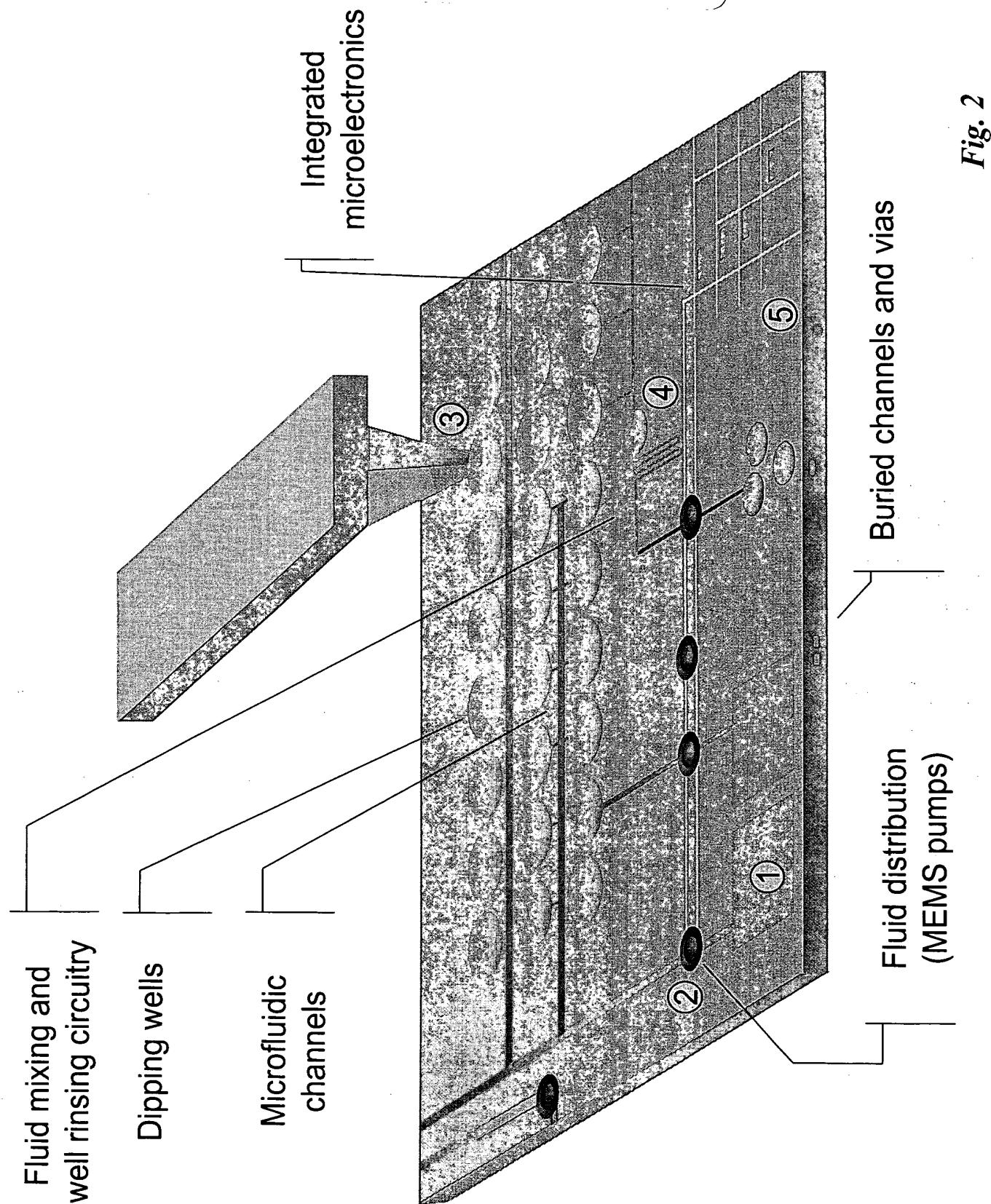
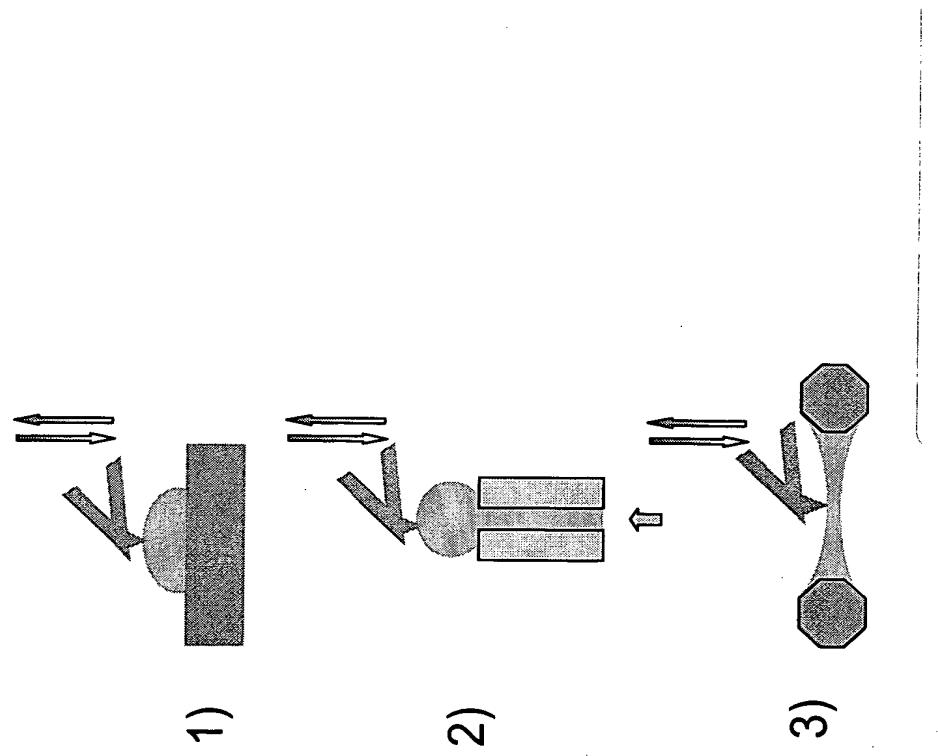


Fig. 2

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*Fig. 3*

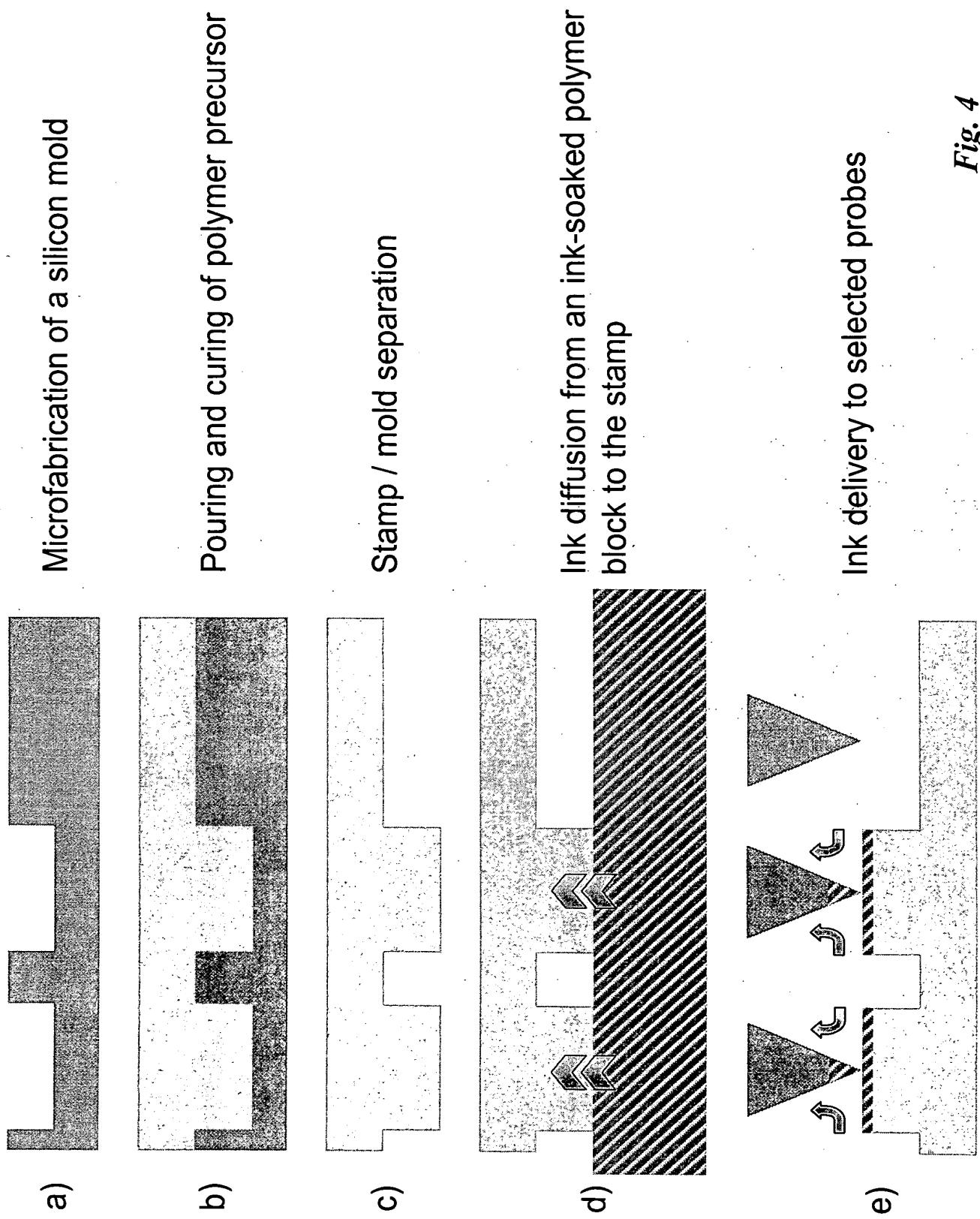


Fig. 4

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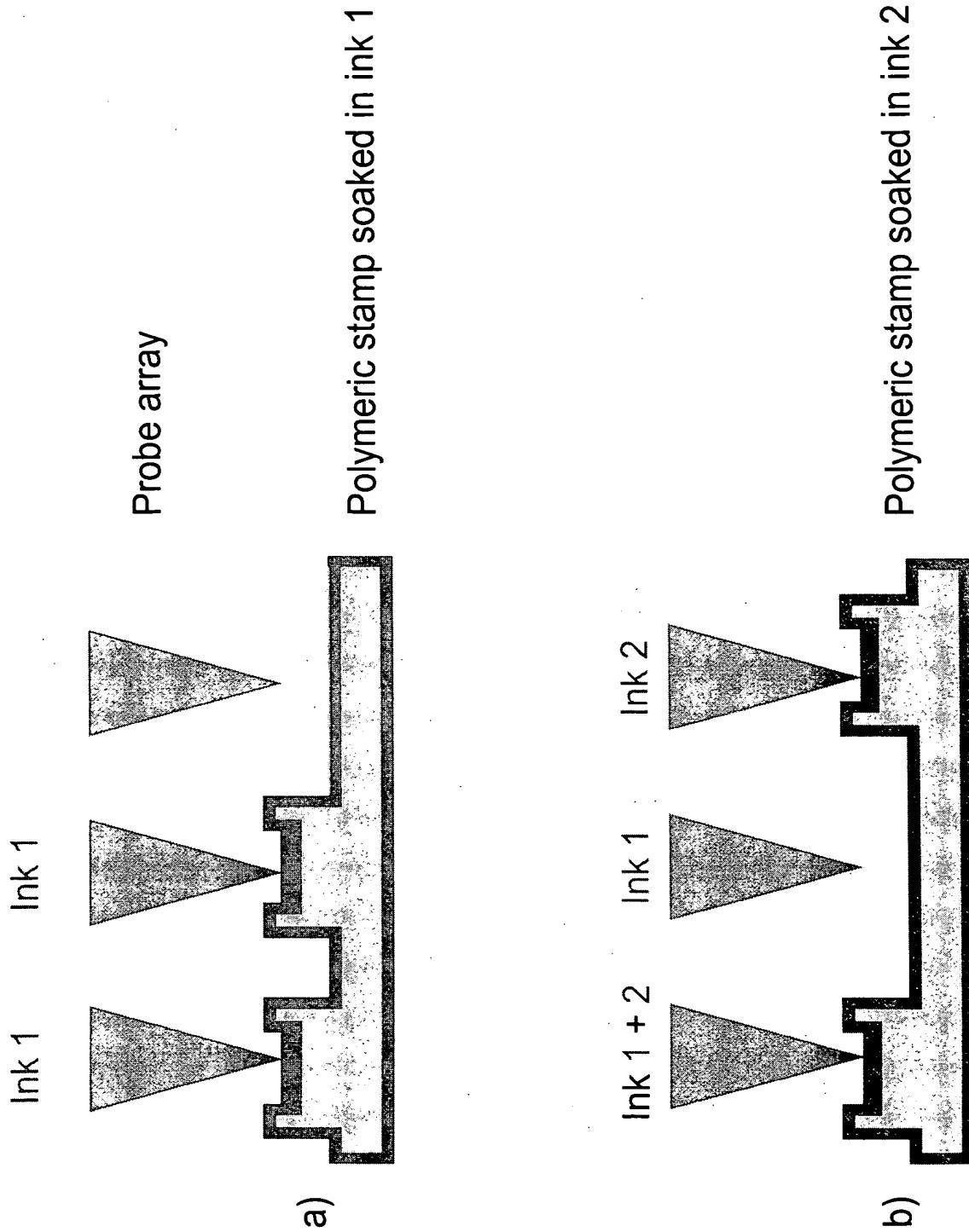


Fig. 5

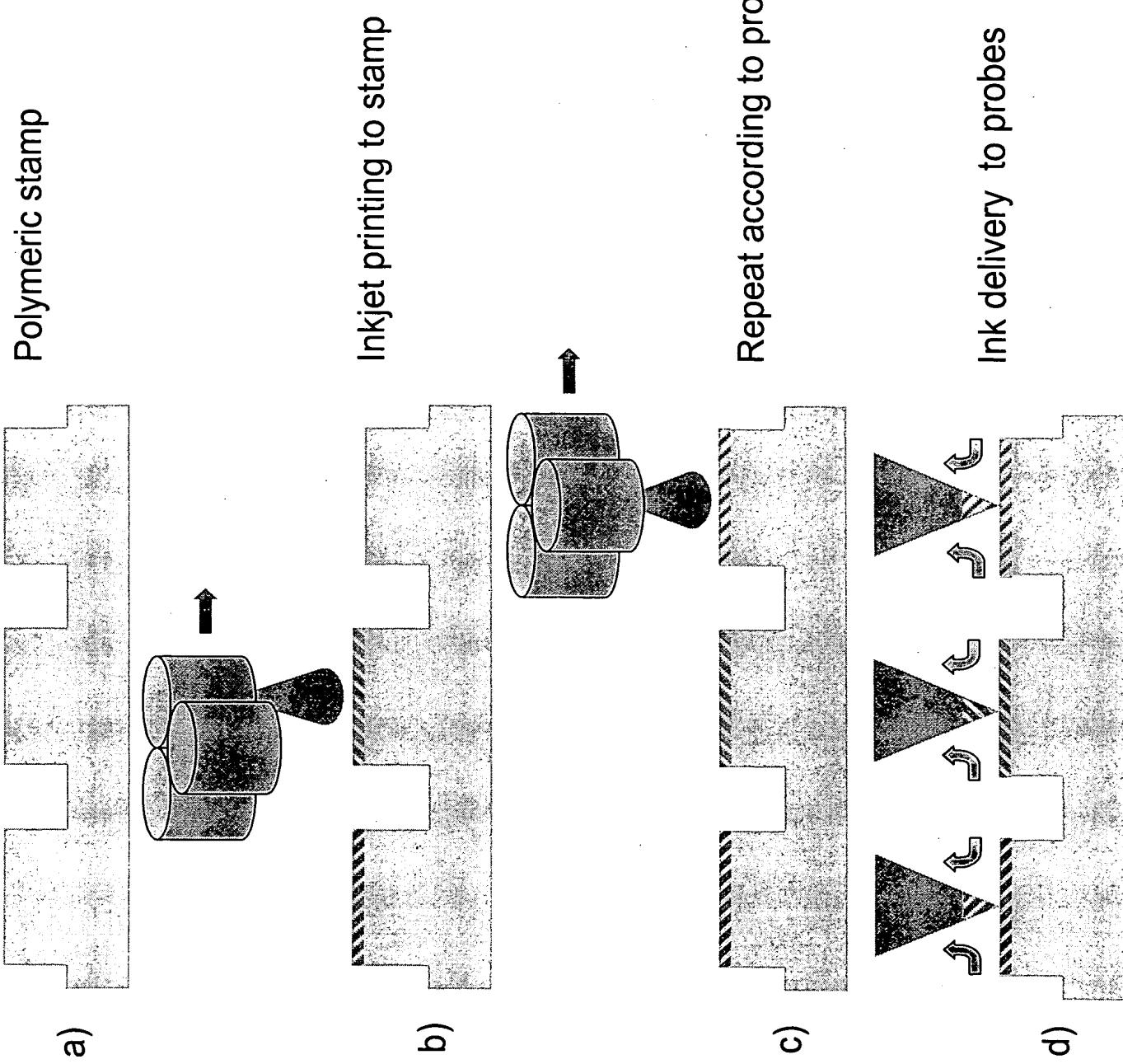


Fig. 6

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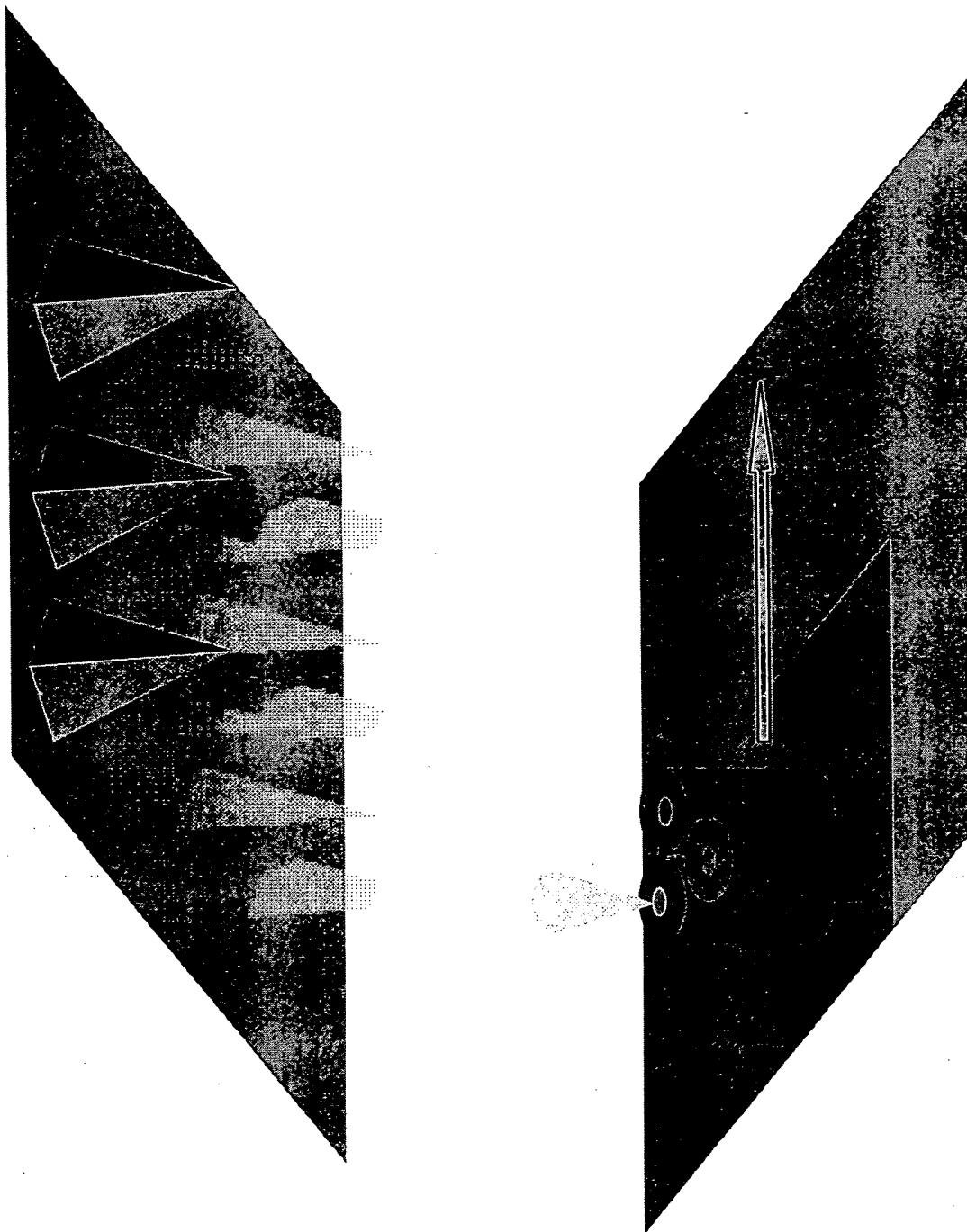


Fig. 7

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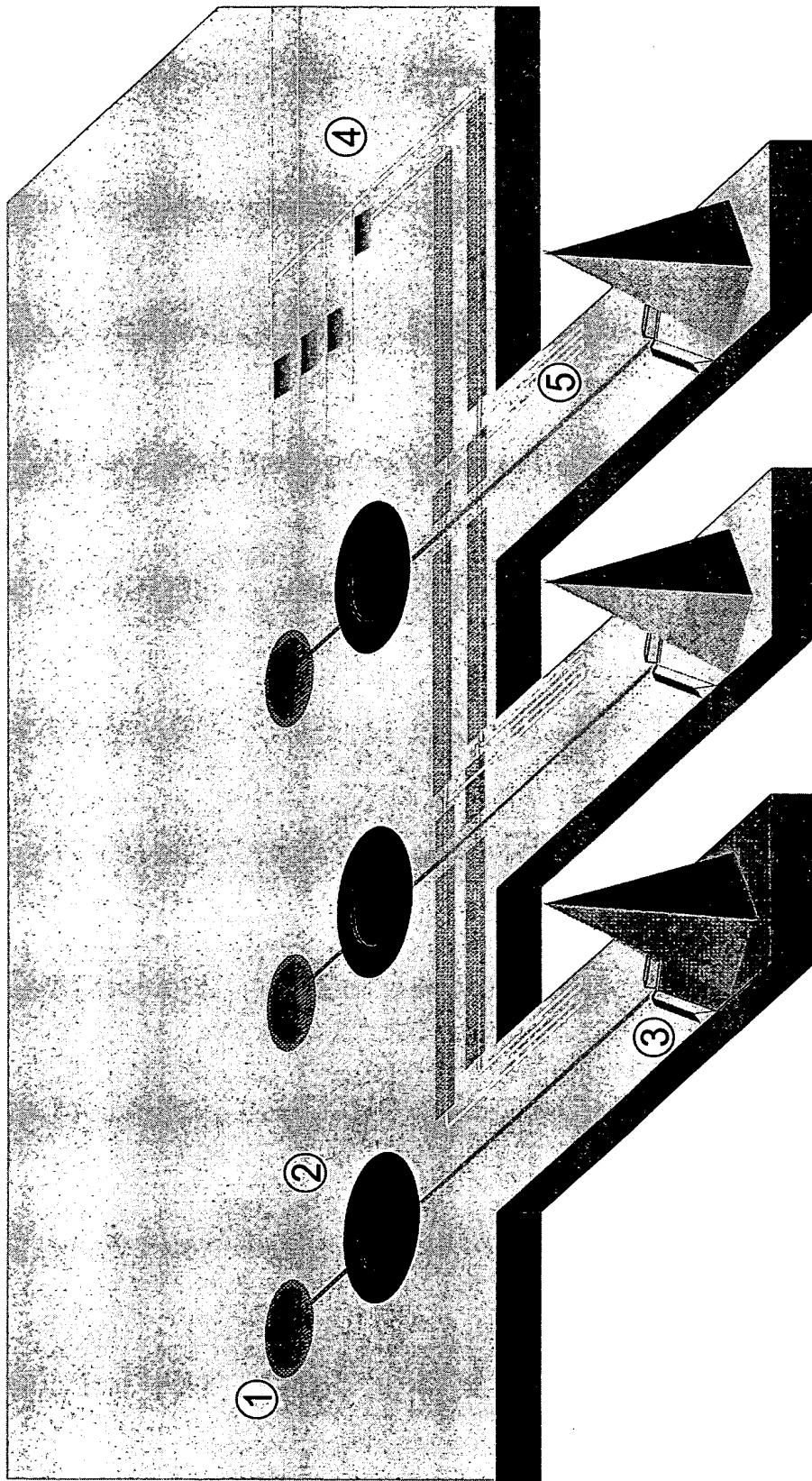


Fig. 8

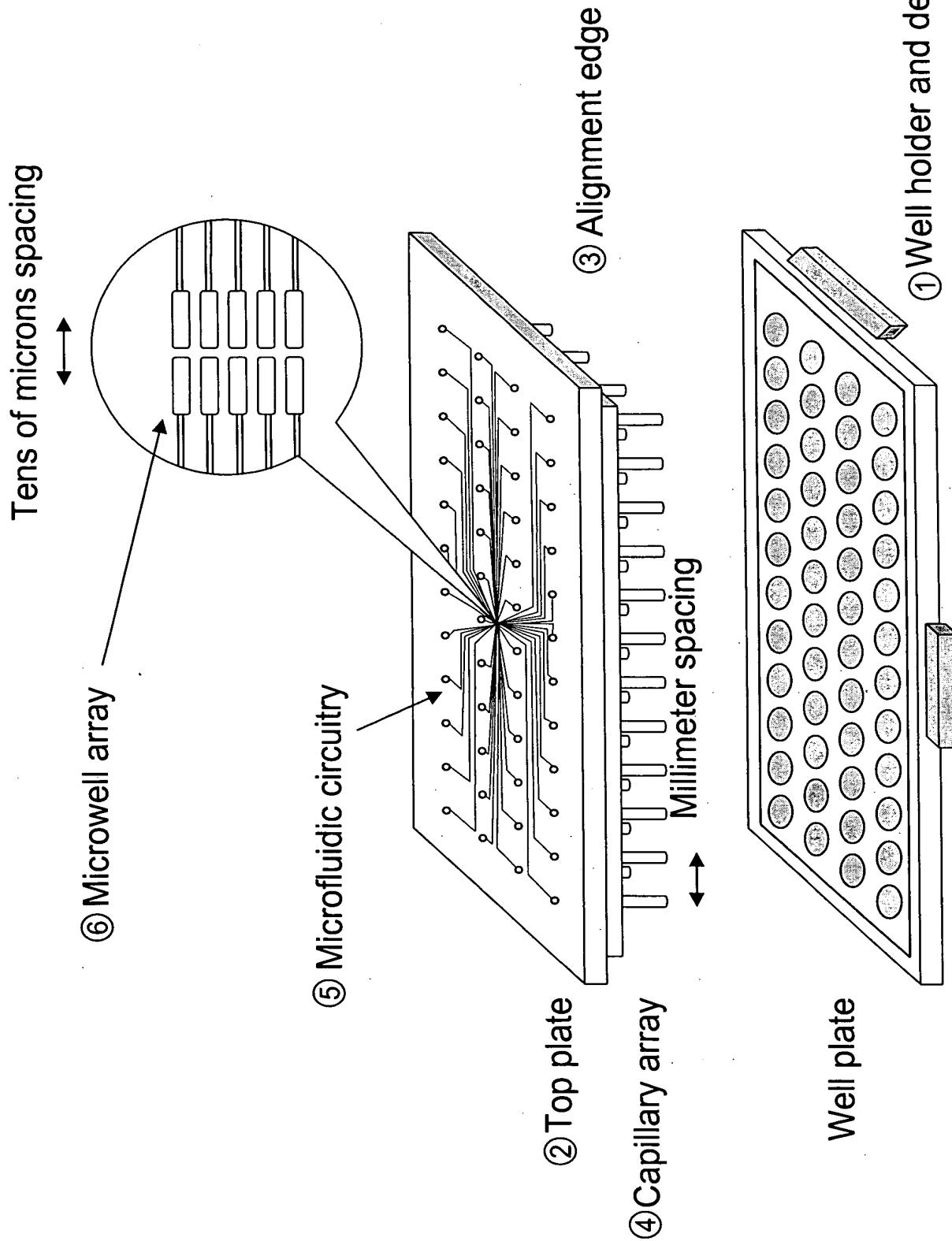
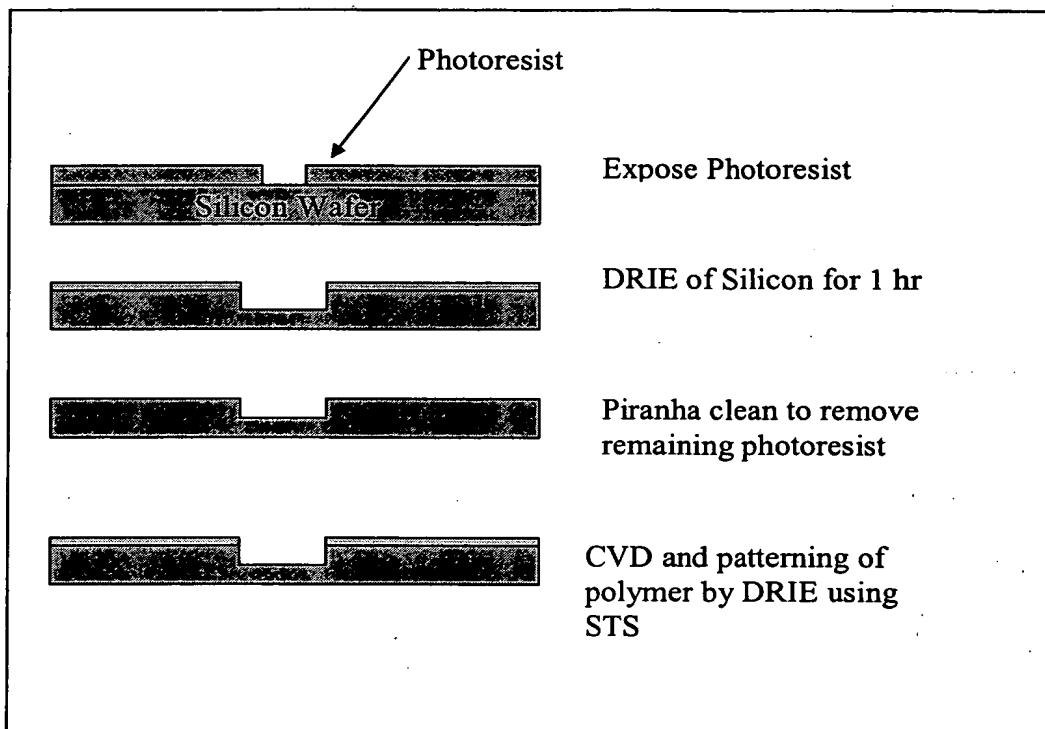


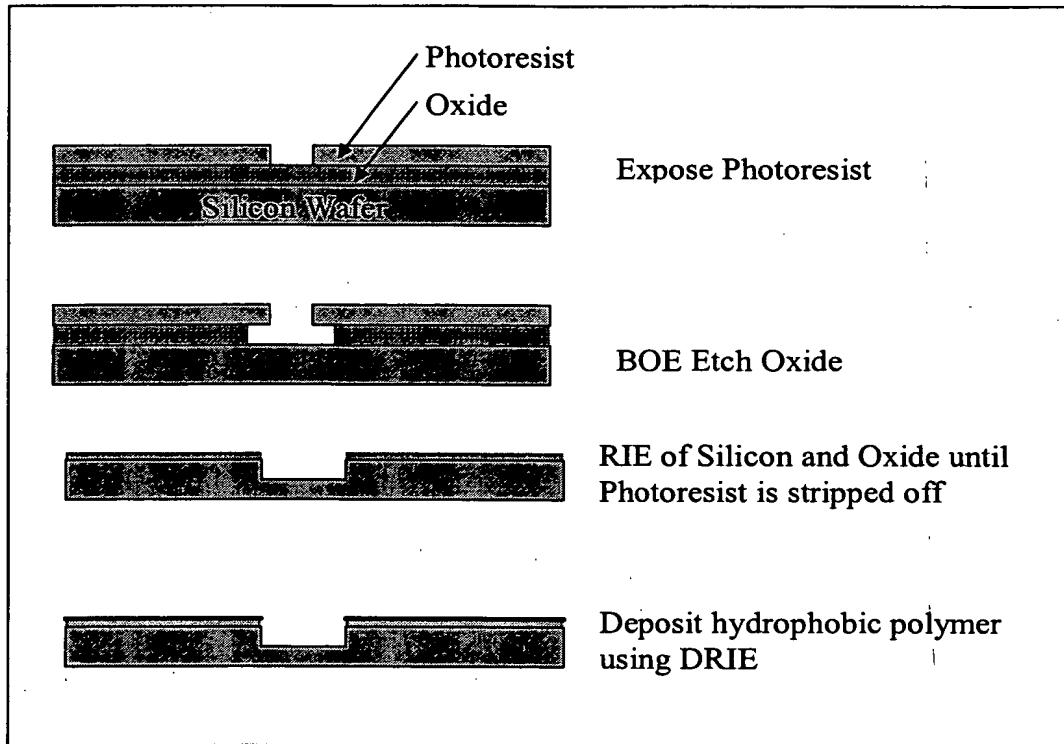
Fig. 9

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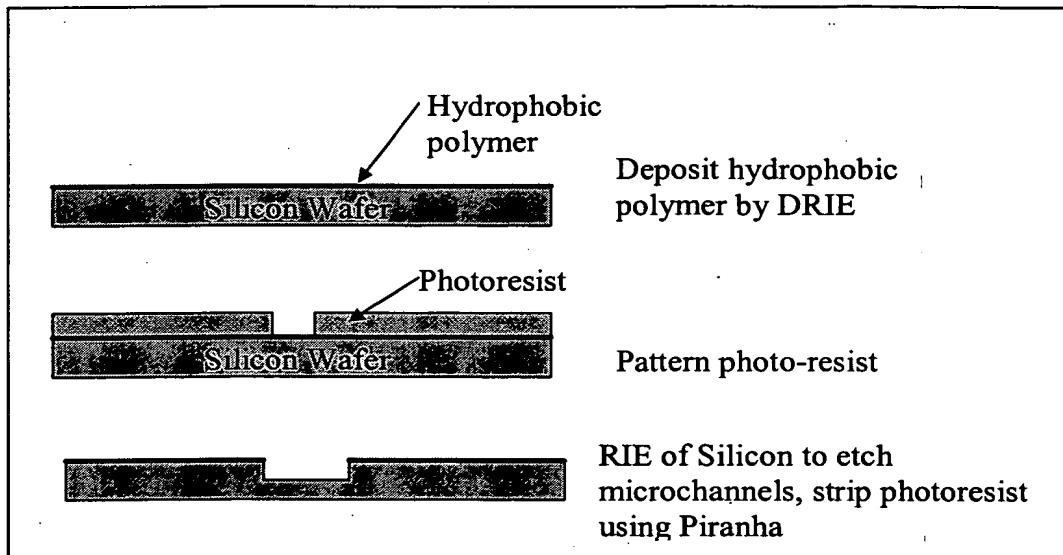
*Fig. 10*

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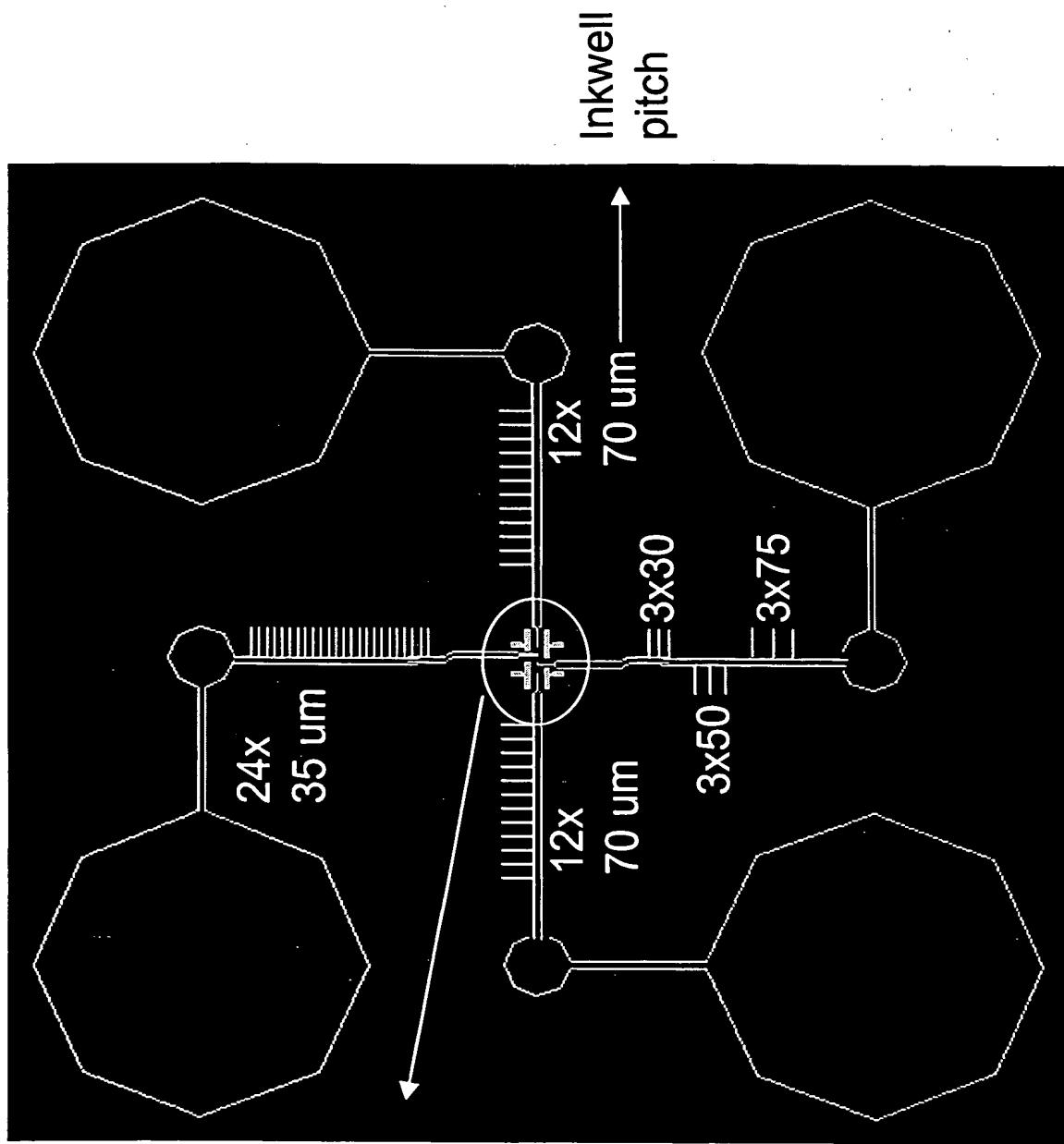
**Fig. 11**

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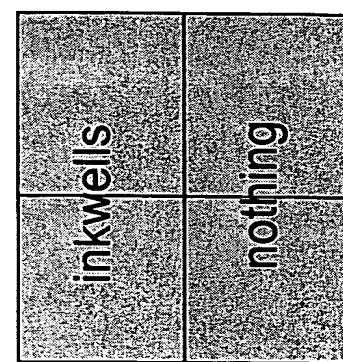


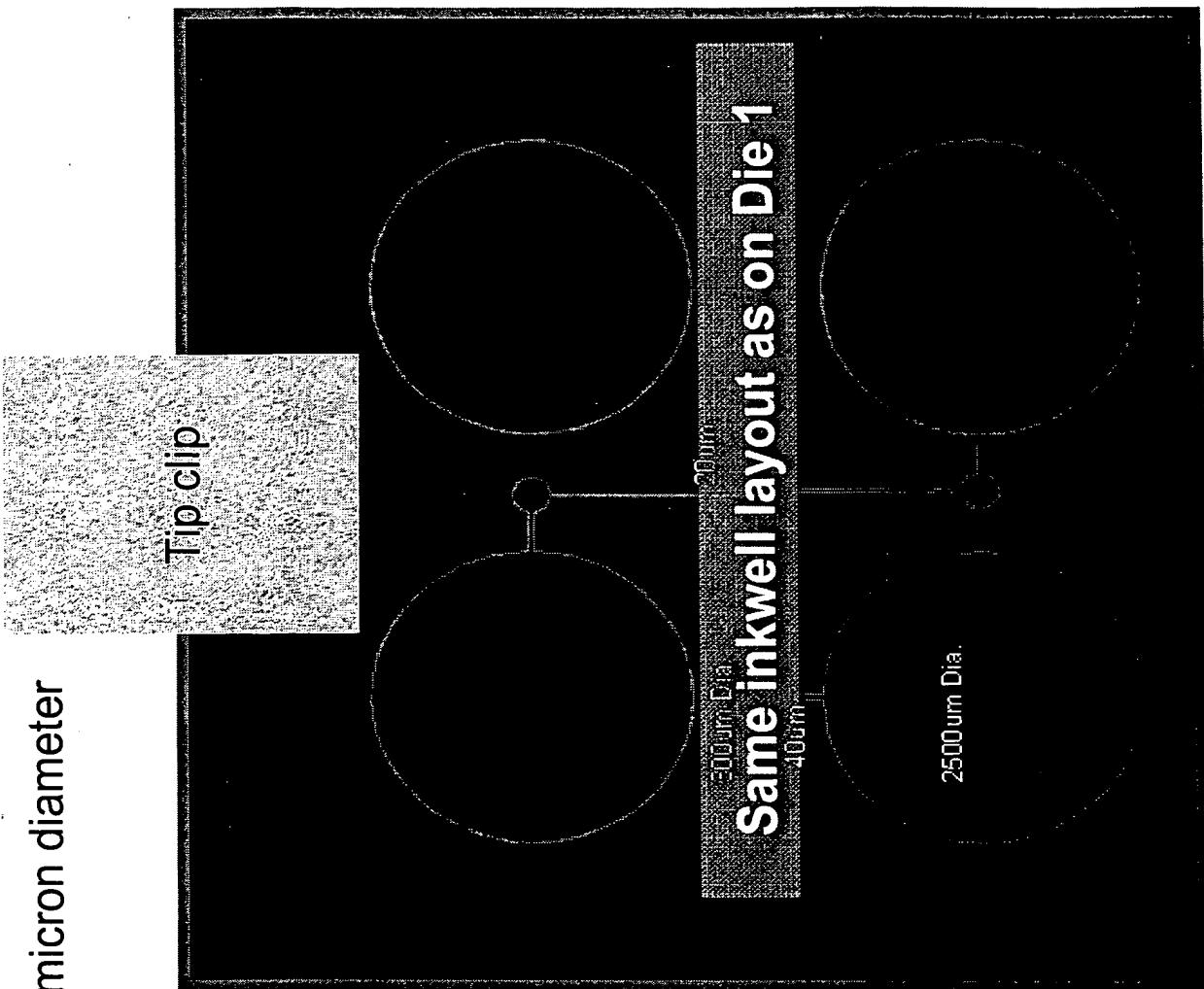
*Fig. 12*

All inkwells 10 micron diameter



Die 1



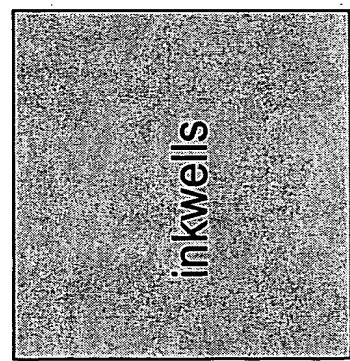


All inkwells 10 micron diameter

## Die 2

Shift design down to  
accommodate for bigger  
spring clip

1x with  
2.5 mm reservoirs:



8 mm wide

Fig. 14

For multiple ink inkwell designs.

Reason: Cantilevers in parallel with  
the channel,  
thus add  
45 degree angle

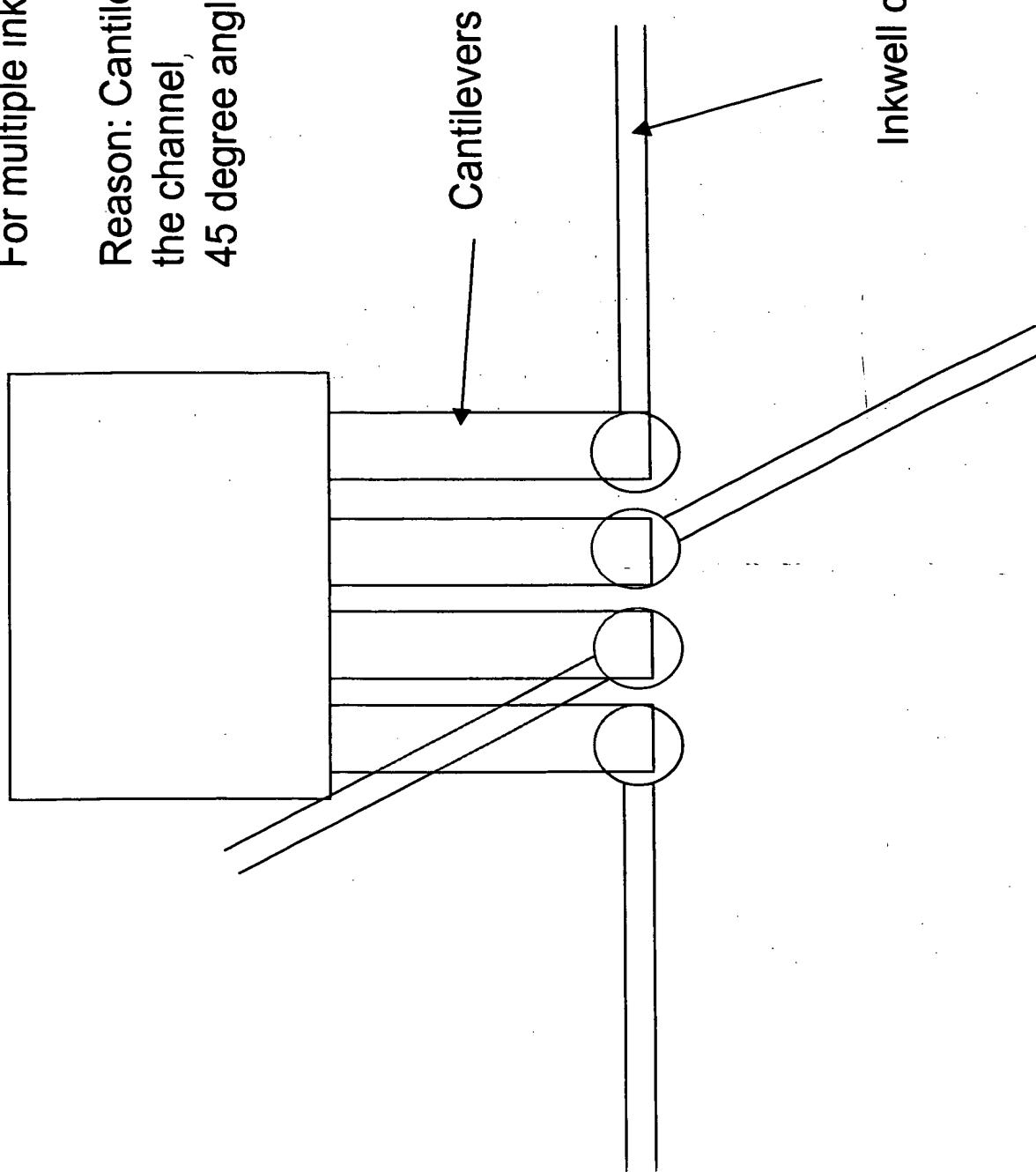
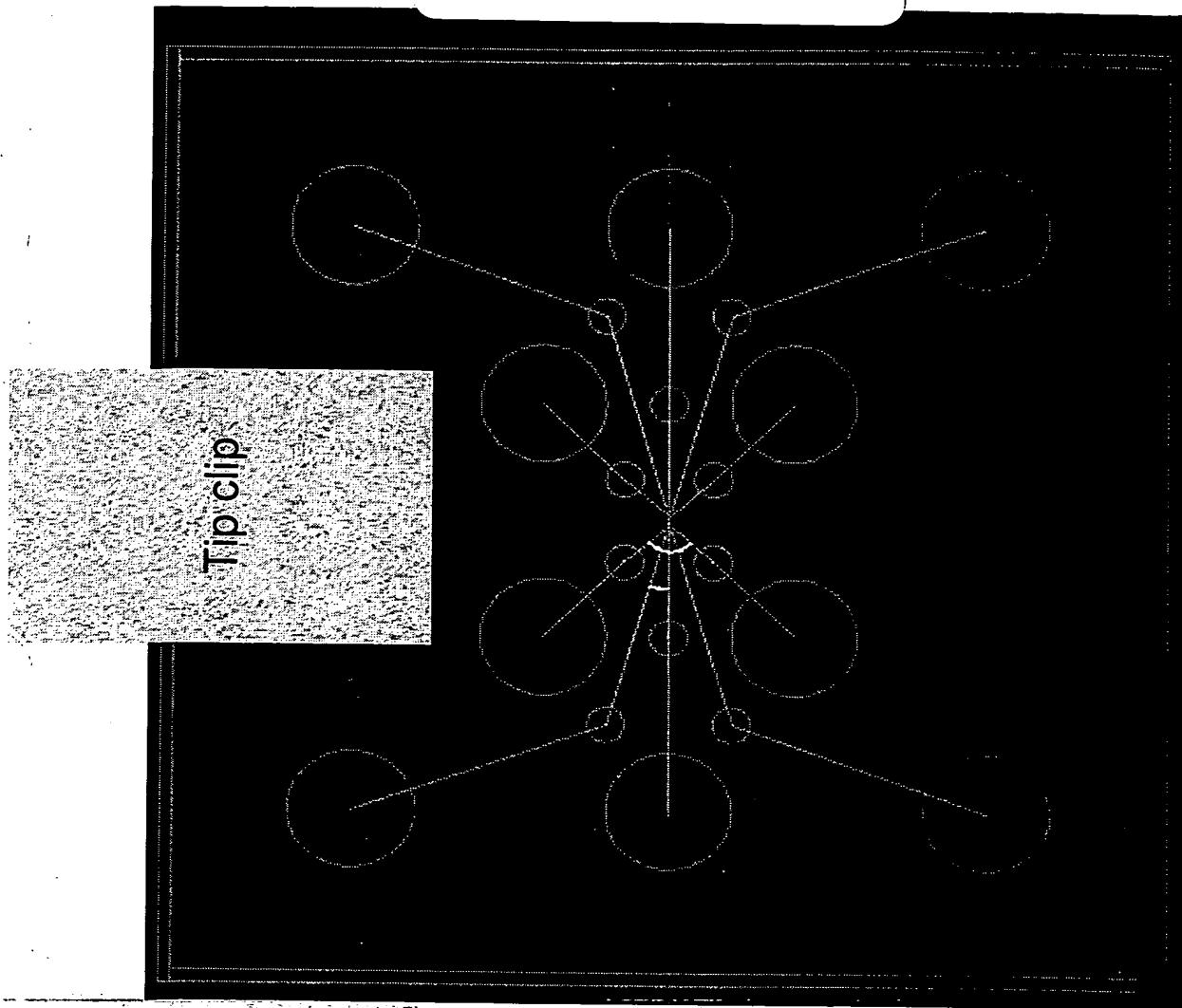


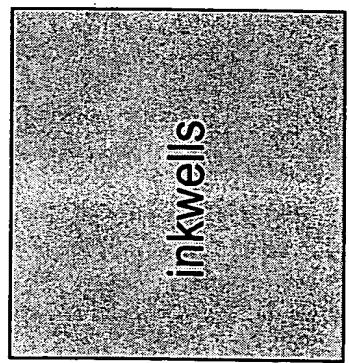
Fig. 15



**Die 3**

10x 1mm reservoir  
Don't need inkwells on channels  
All inkwells 10 micron diameter,  
35 micron pitch

1x with  
10 1mm reservoirs:

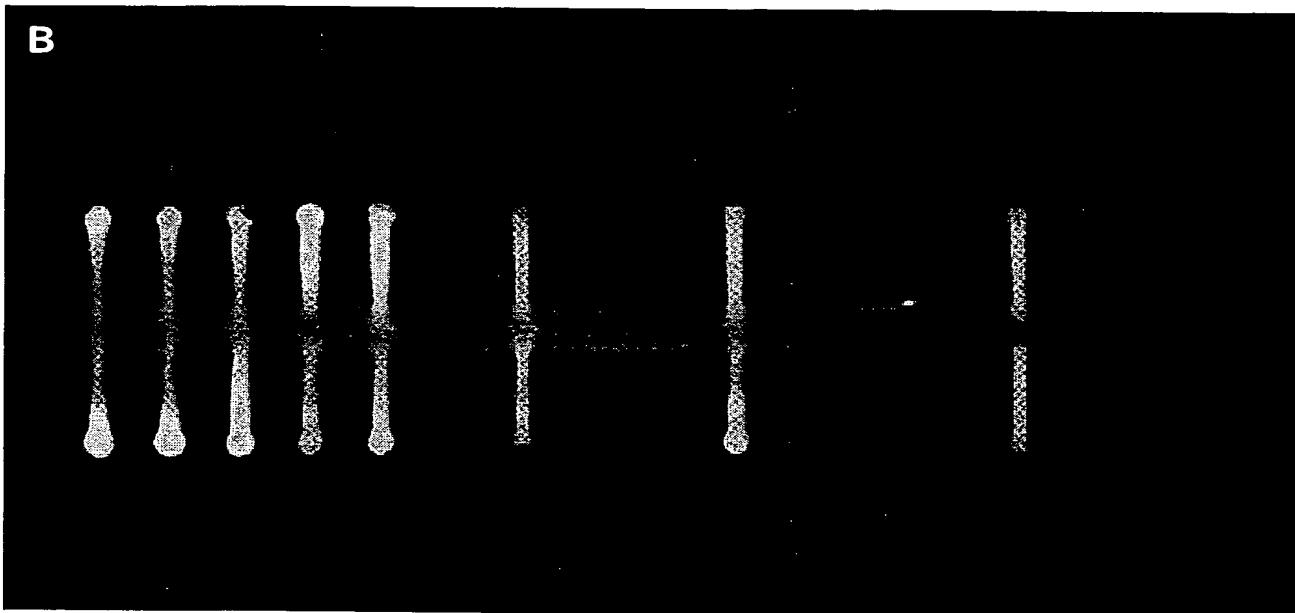
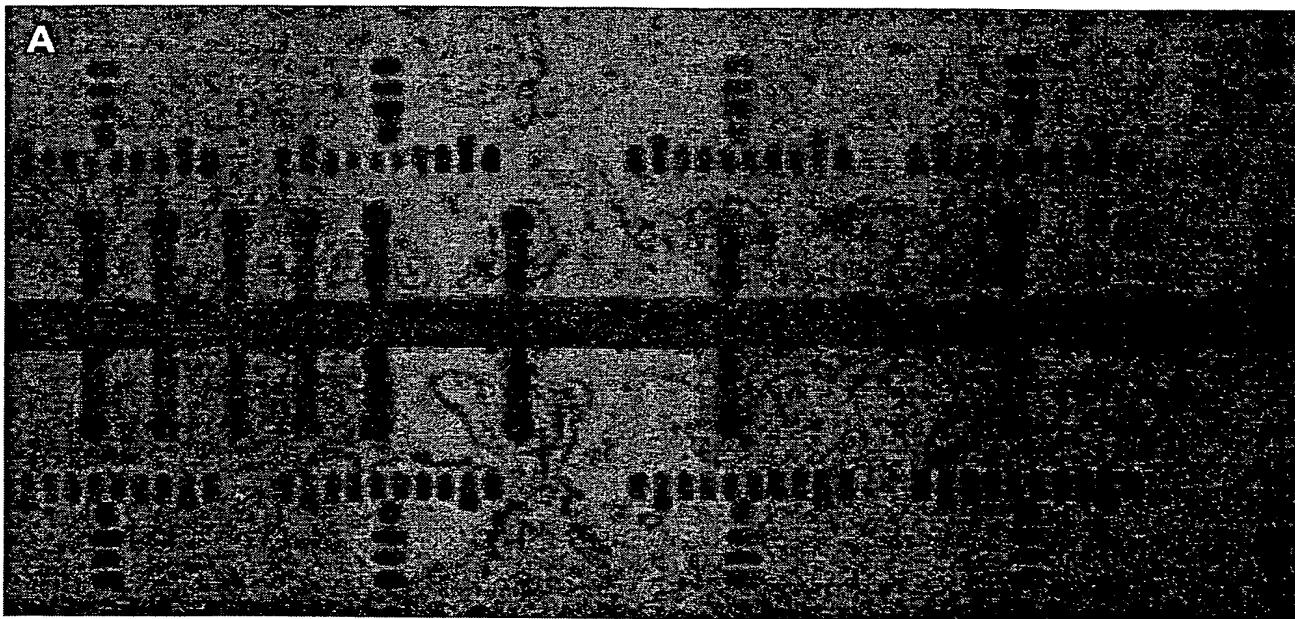


8 mm wide

*Fig. 16*

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## Ink-wells for Dip-Pen Nanolithography

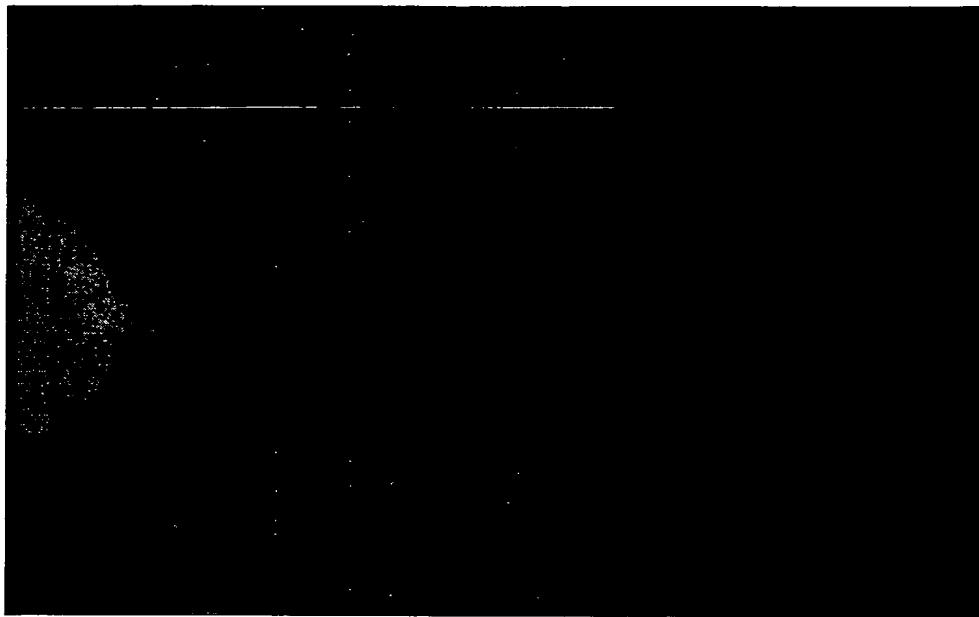


**Testing DPN Ink-wells using fluorescent dye.**

**(A) Phase contrast image of the ink-wells containing a fluorescent dye. (B) Fluorescence microscopy image of the same sample, showing the fluorescent ink flowing inside the micro ink-wells.**

*Fig. 17*

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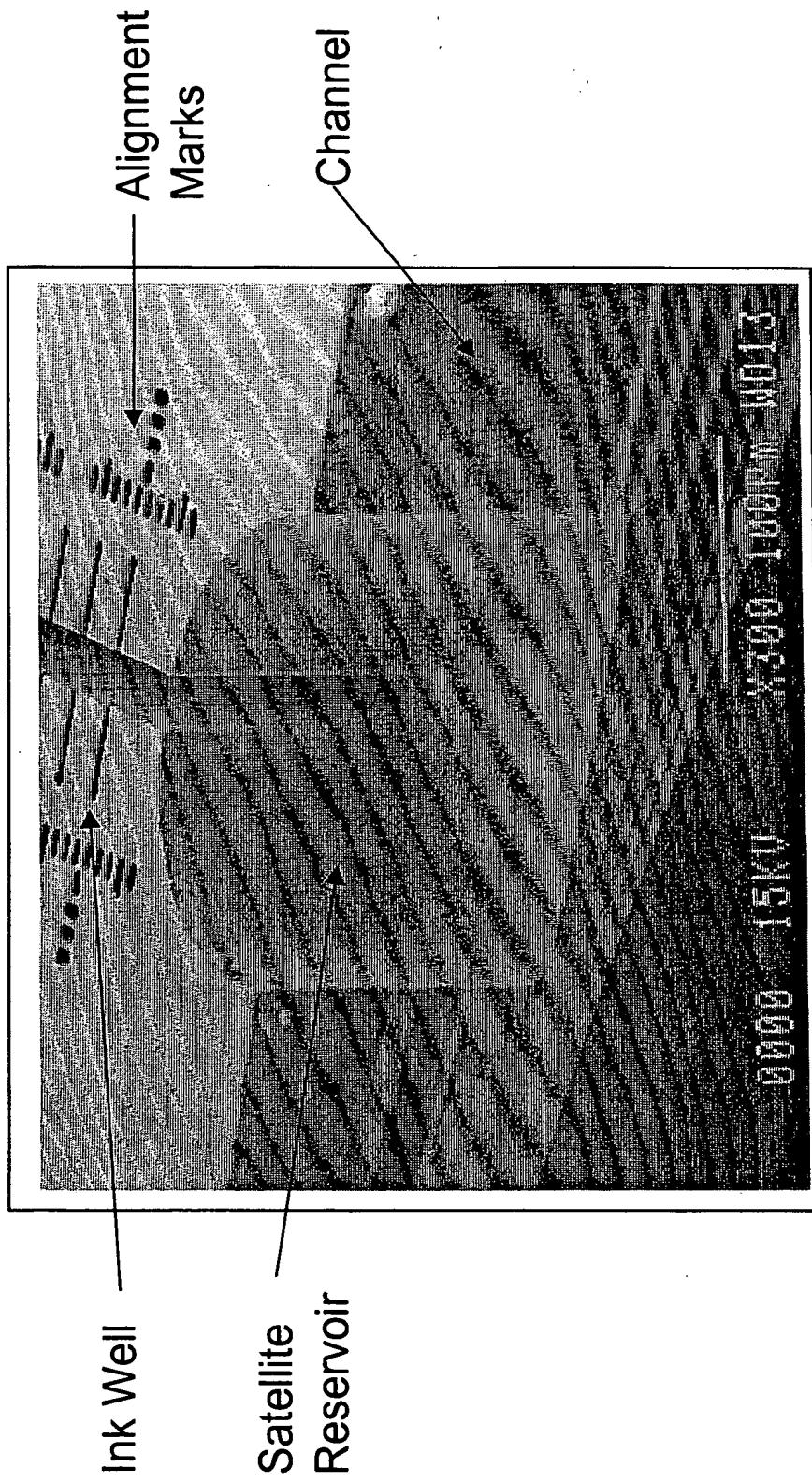


**DPN Ink-wells using Ink and fluorescent dye.**  
**Fluorescence microscopy image showing the fluorescent ink flowing inside the micro ink-wells.**

*Fig. 18*

# Fabrication (SEM Pictures)

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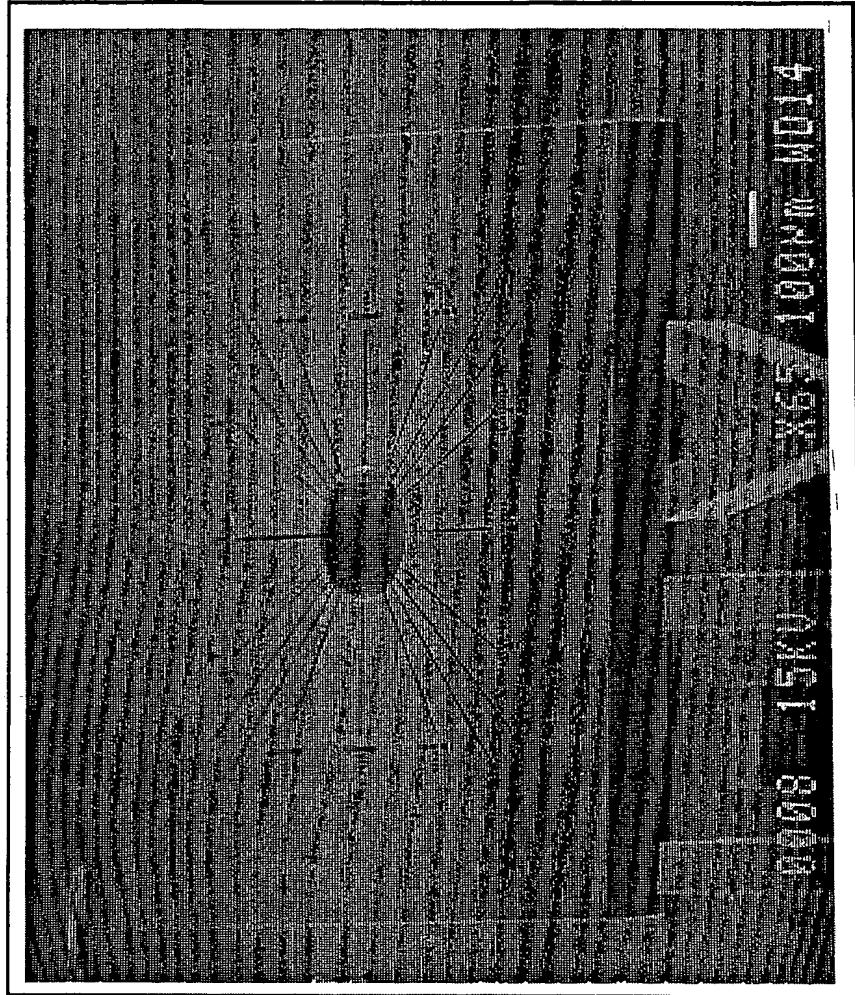


Satellite reservoir with channels, inkwells and alignment marks

Fig. 19

# Fabrication (SEM Pictures)

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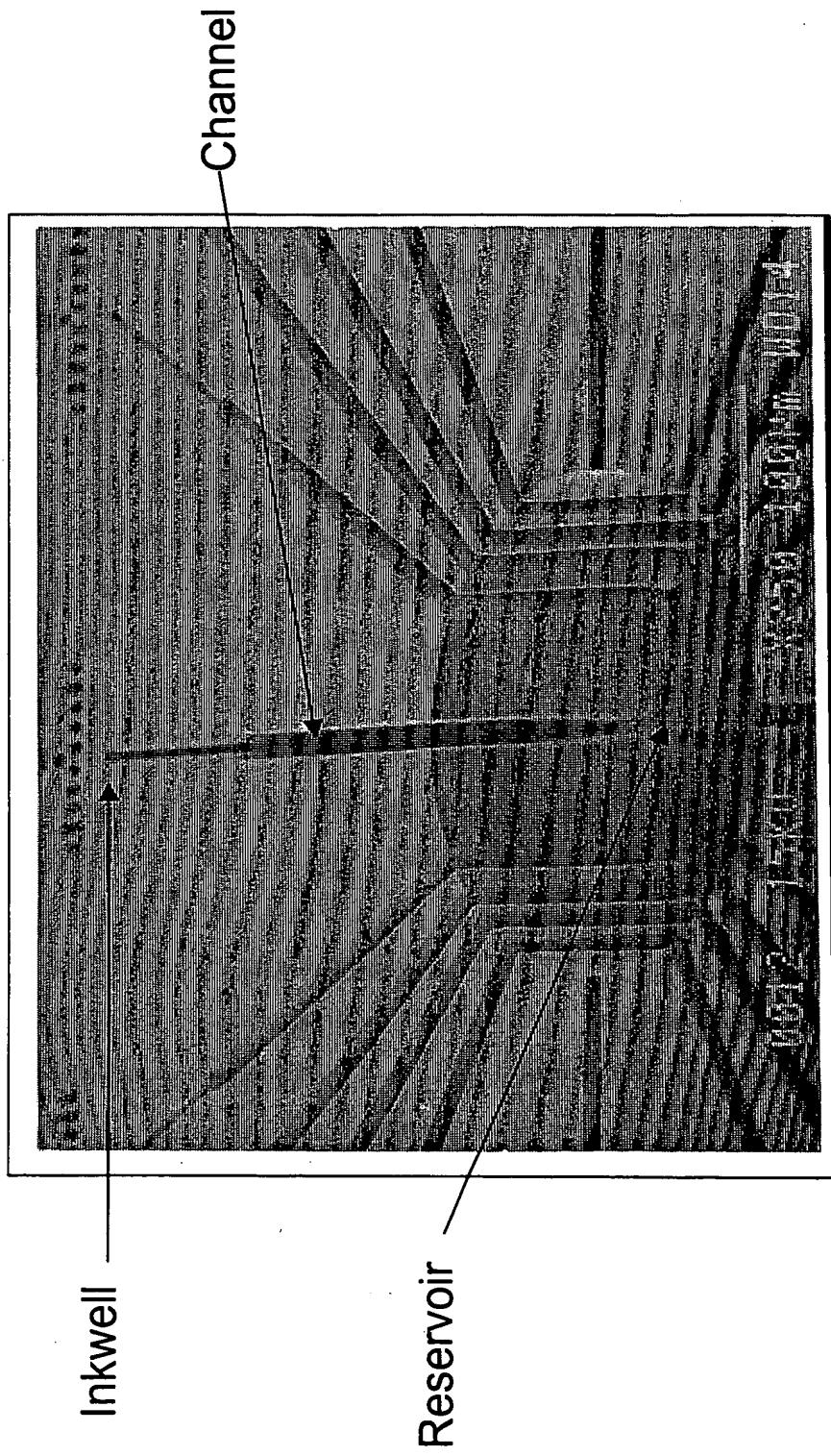


Overview of inkwell layout, reservoir and alignment marks

Fig. 20

# Fabrication (SEM Pictures)

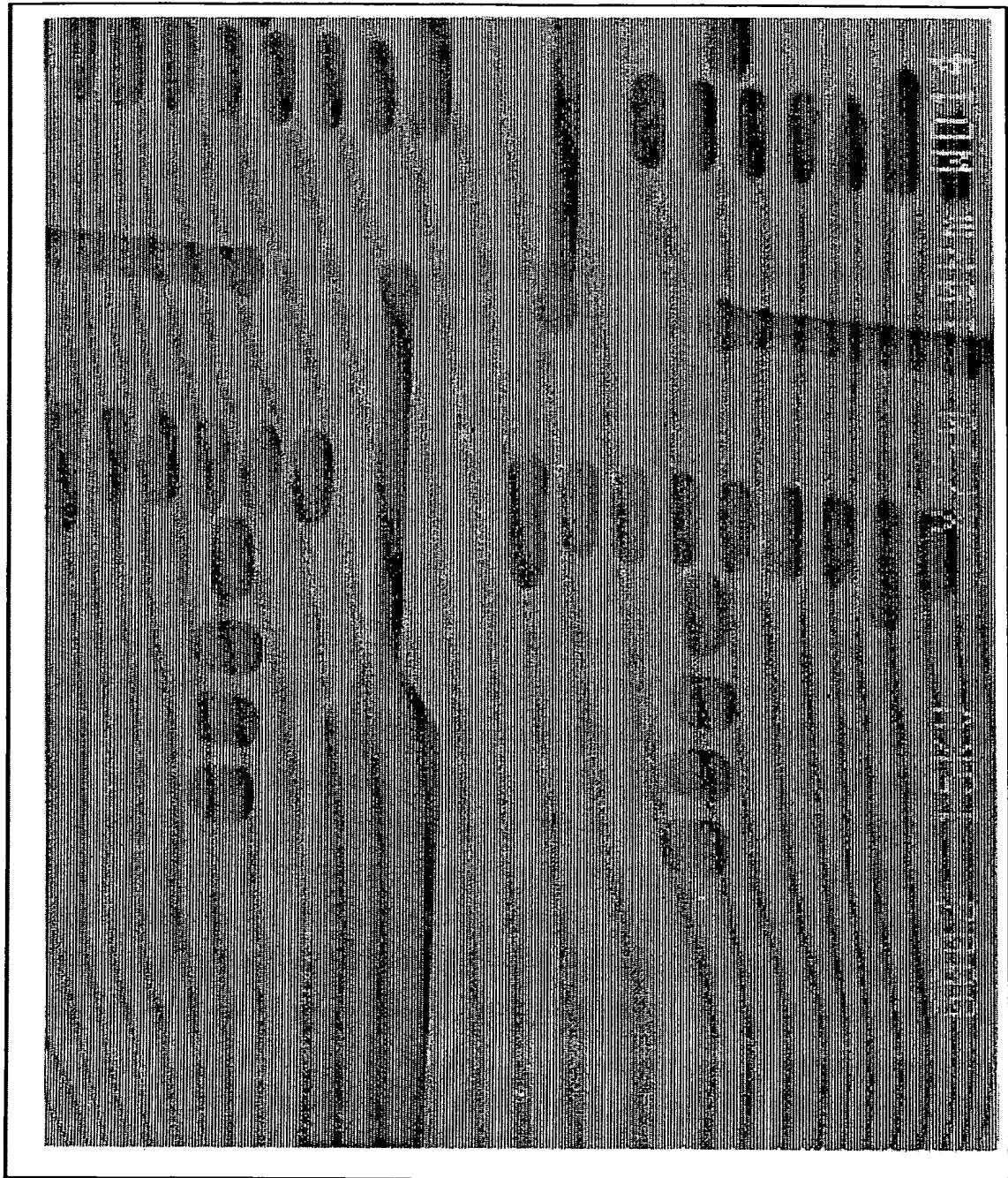
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Close up of inkwell layout, reservoir and alignment marks

Fig. 21

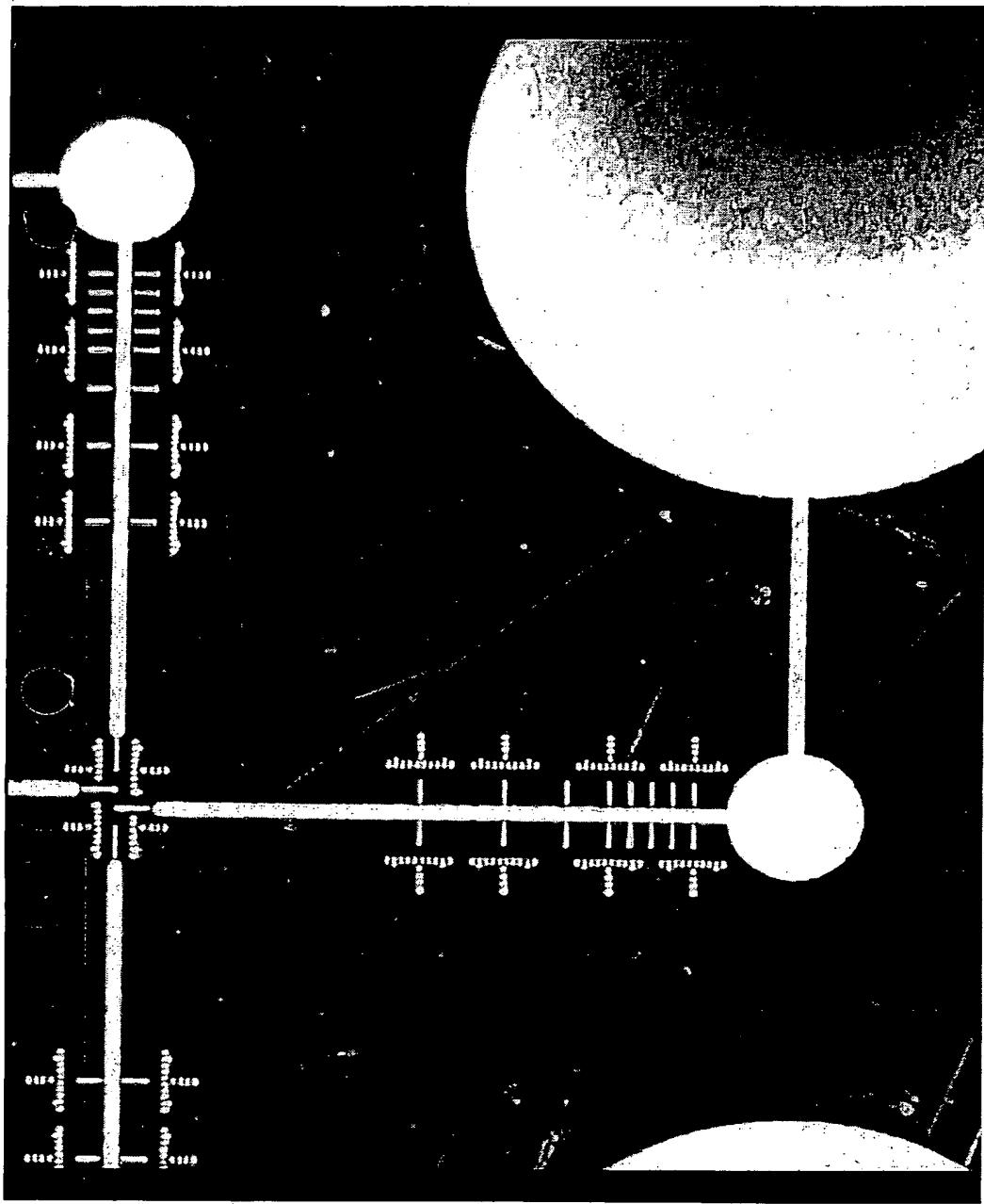
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Close up of inkwell layout and alignment marks

Fig. 22

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*Fig. 23*

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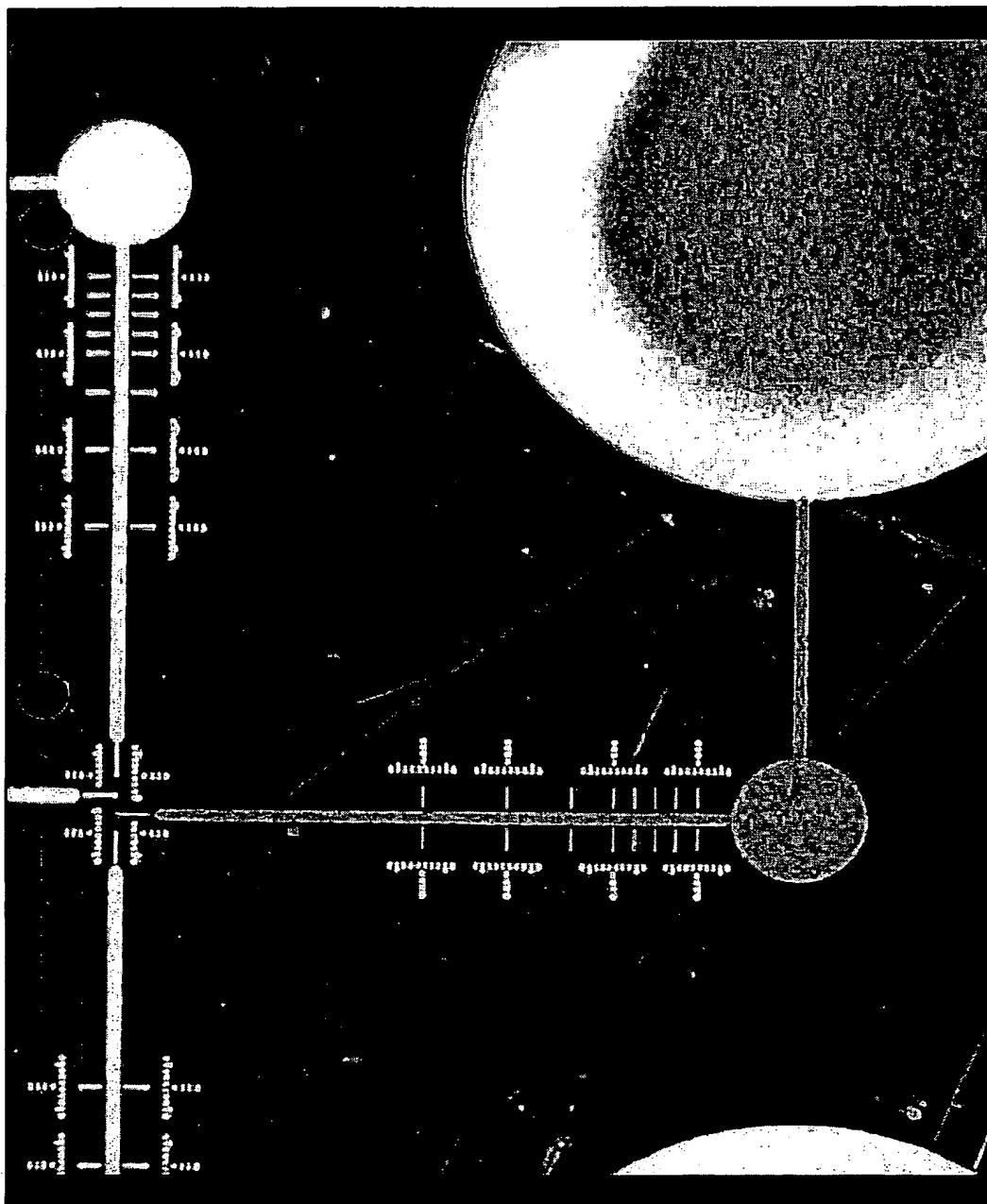


Fig. 24

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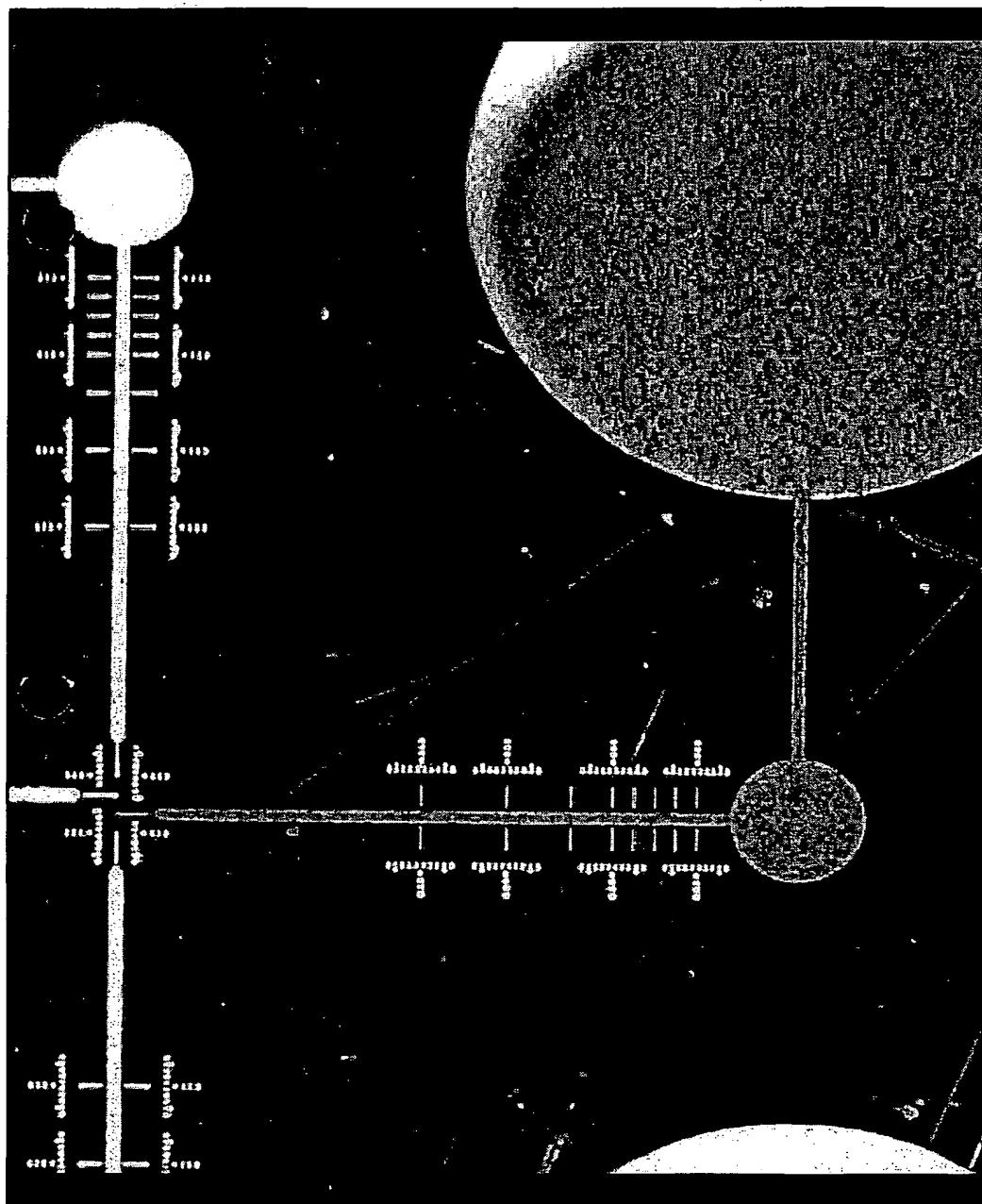
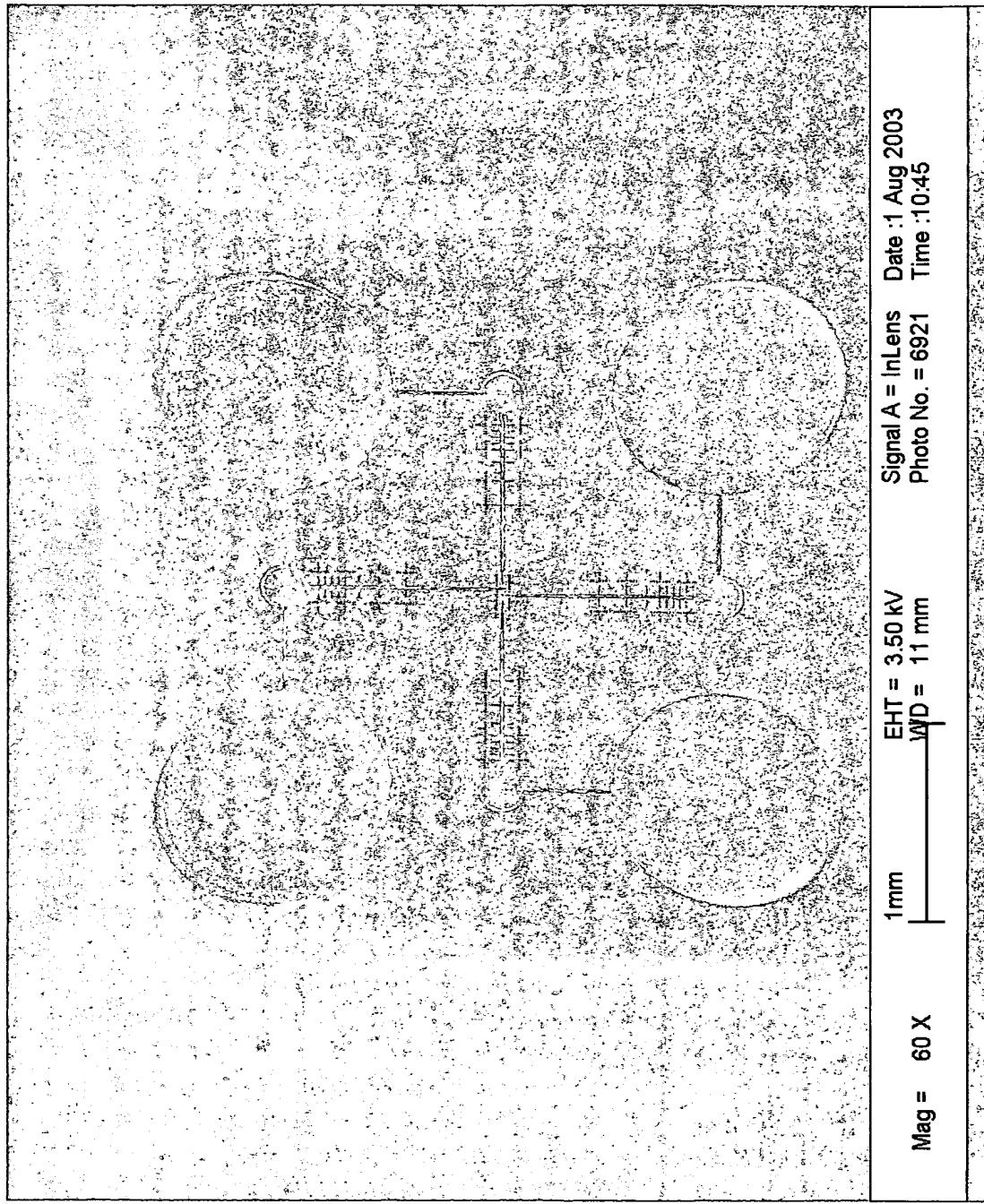


Fig. 25

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Fig. 26



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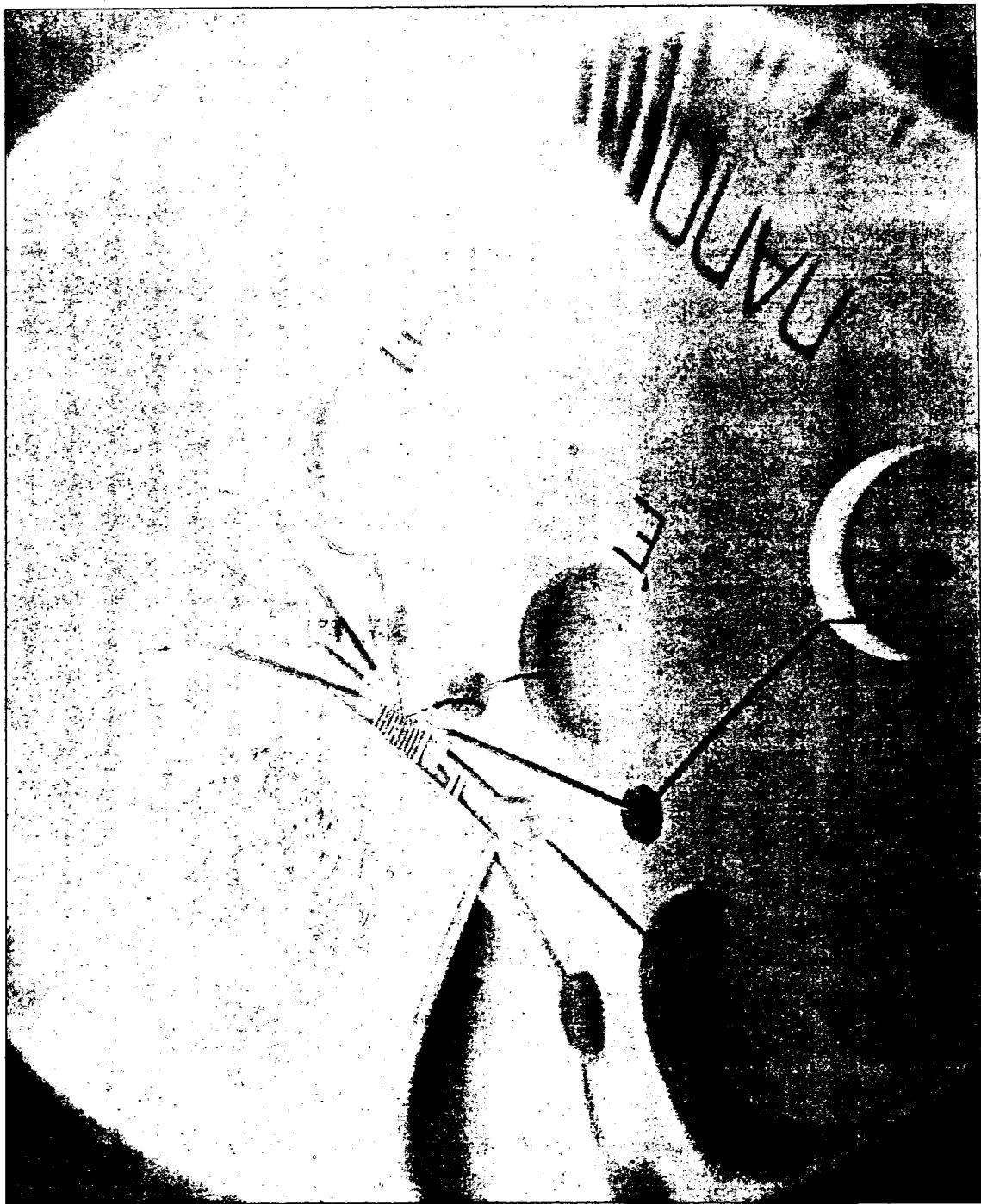
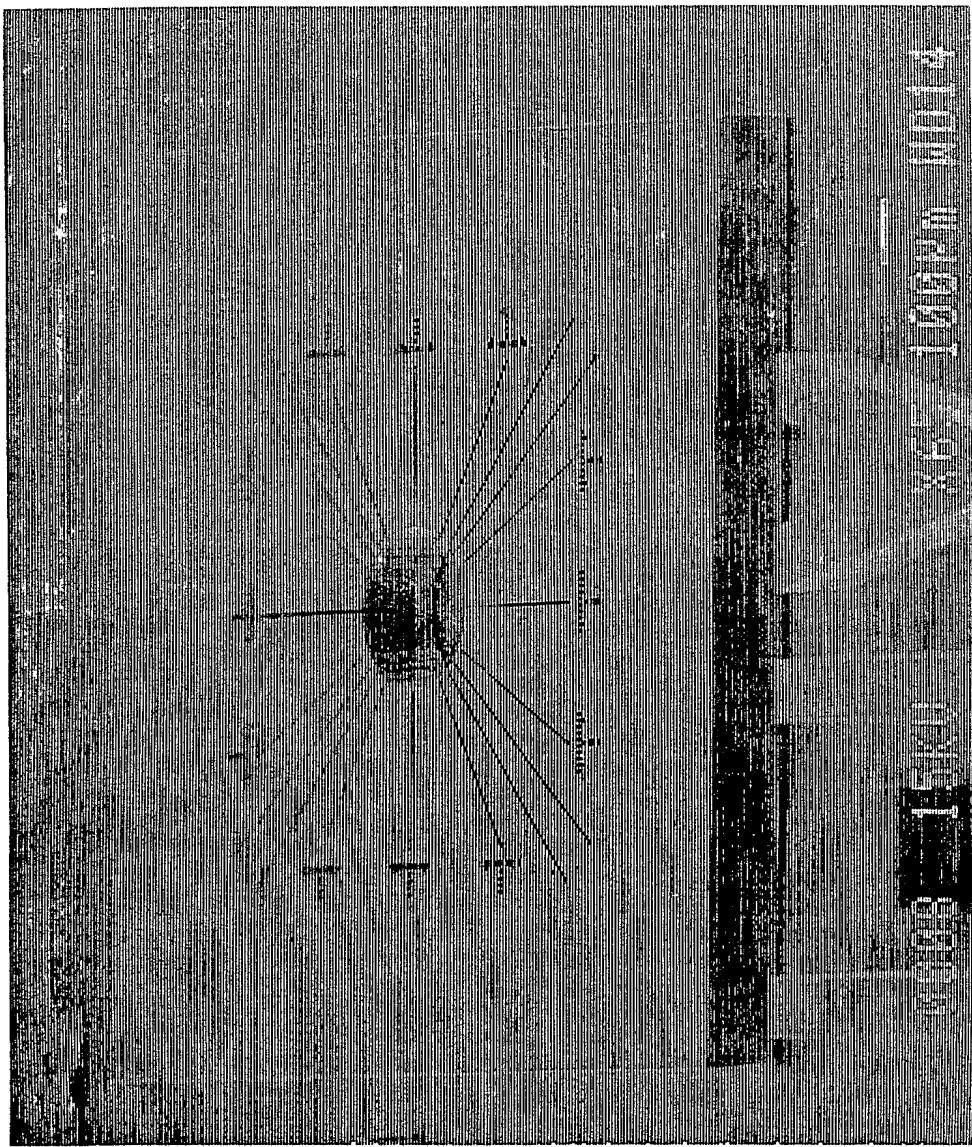


Fig. 27

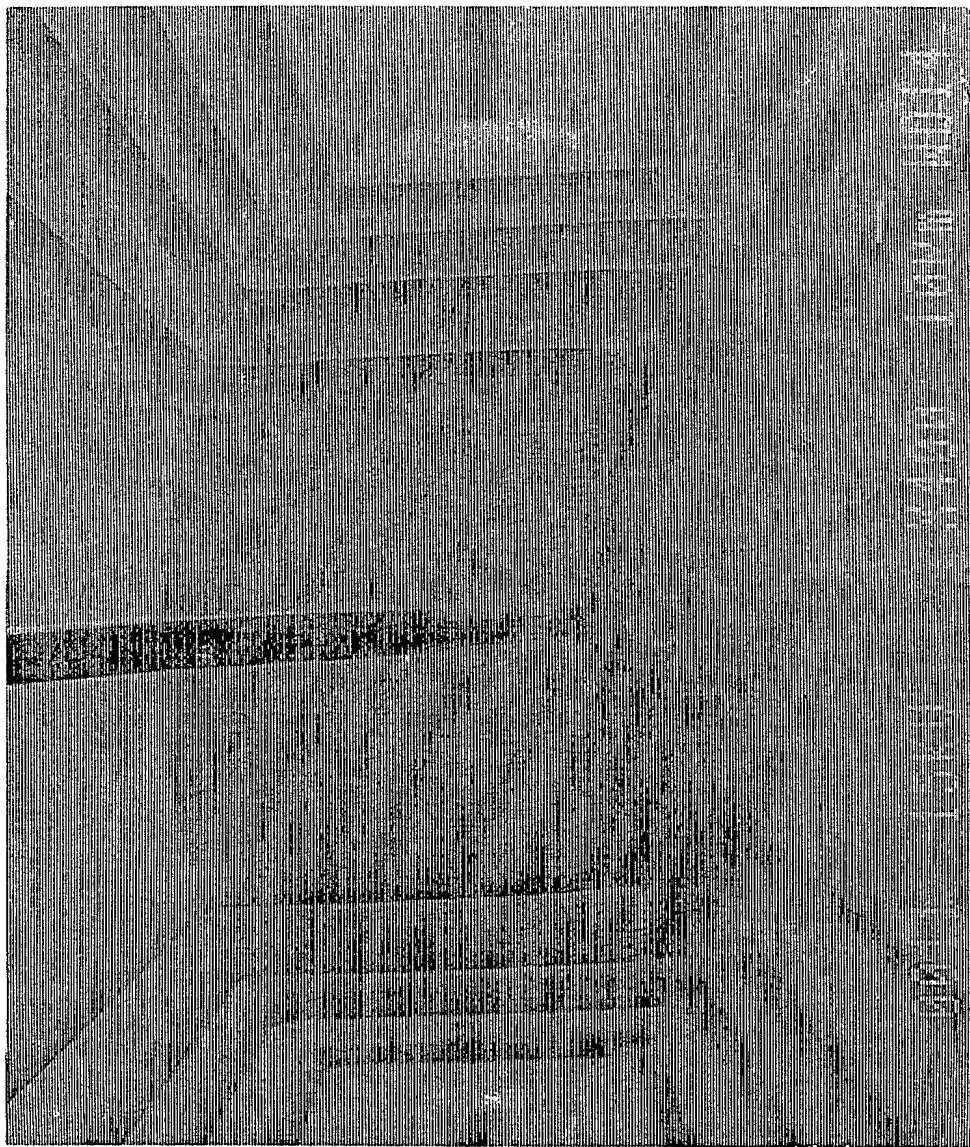
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*Fig. 28*



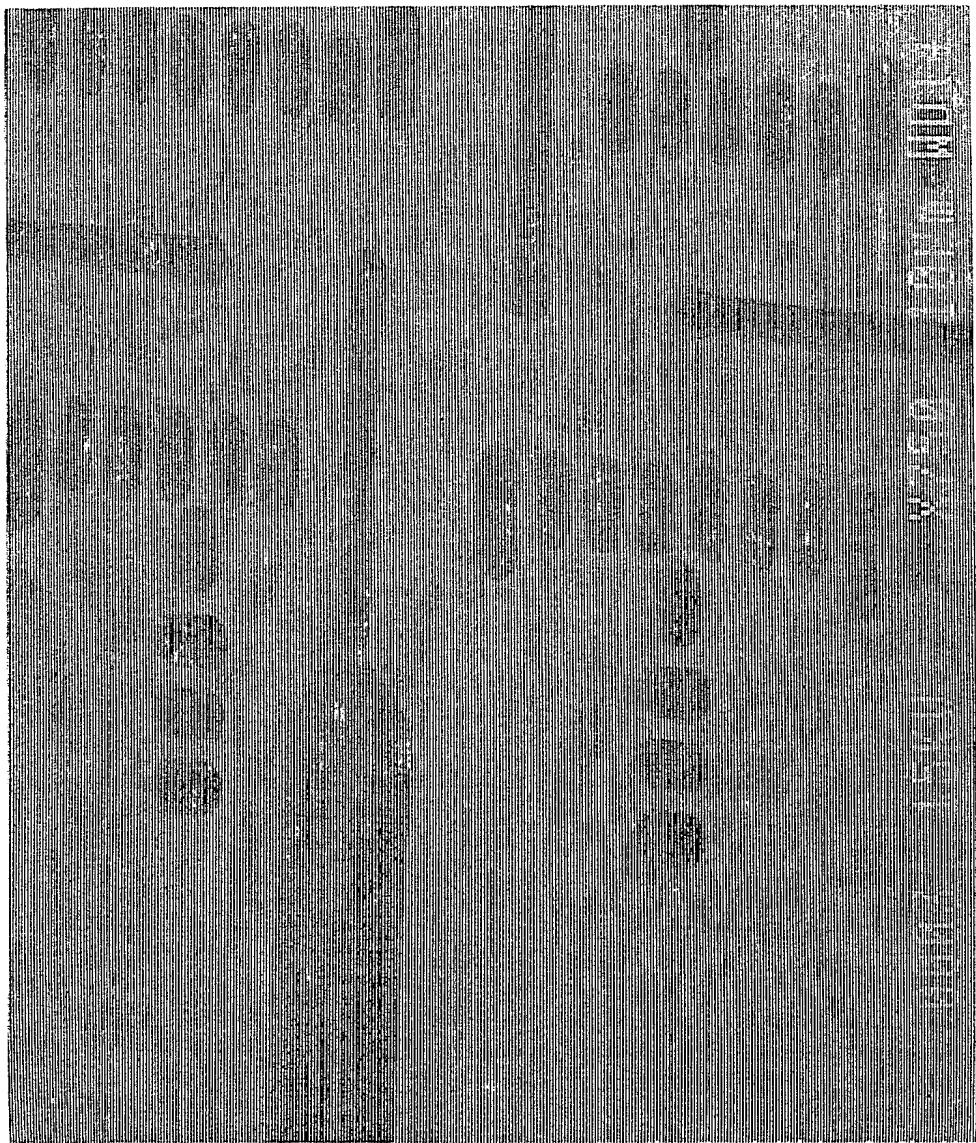
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*Fig. 29*



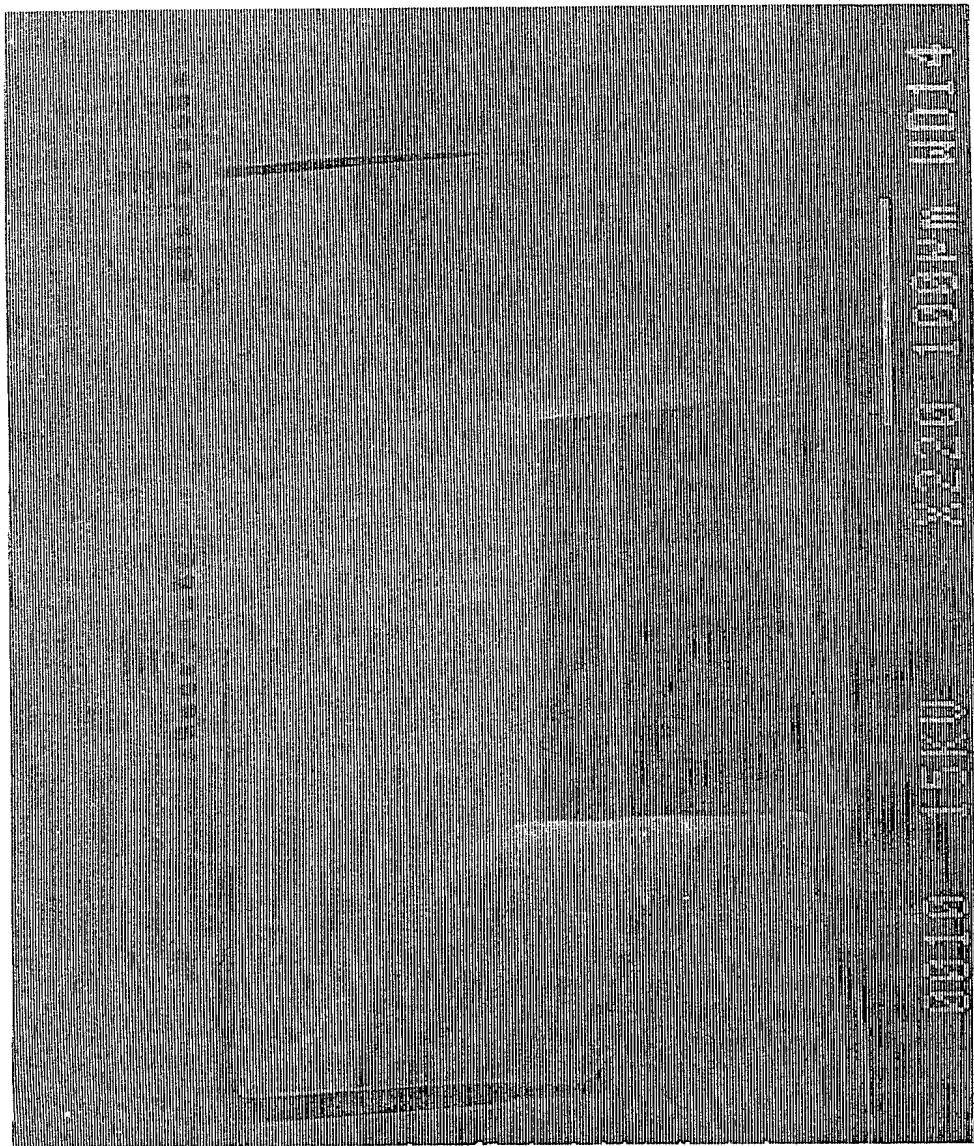
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*Fig. 30*



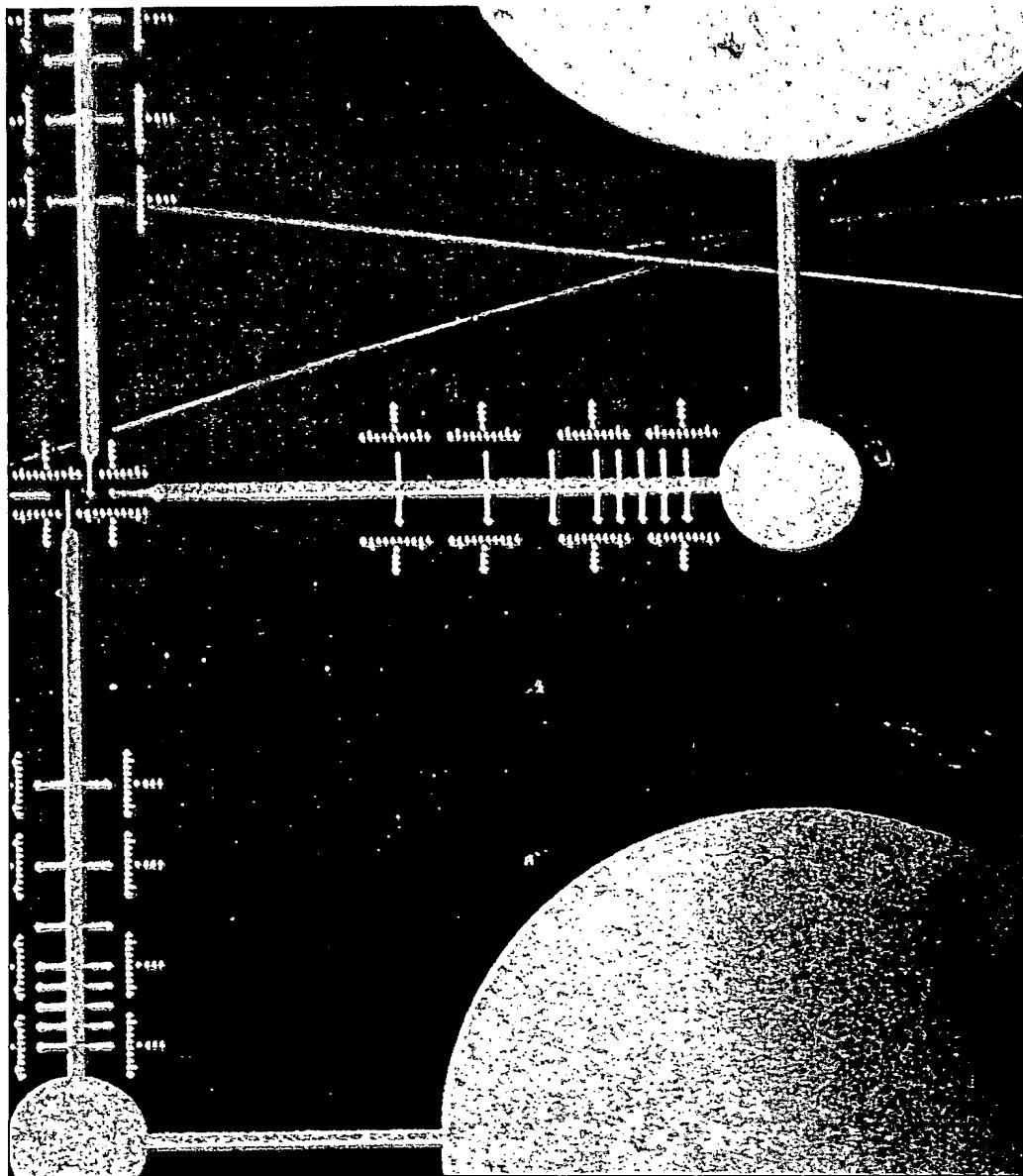
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*Fig. 31*



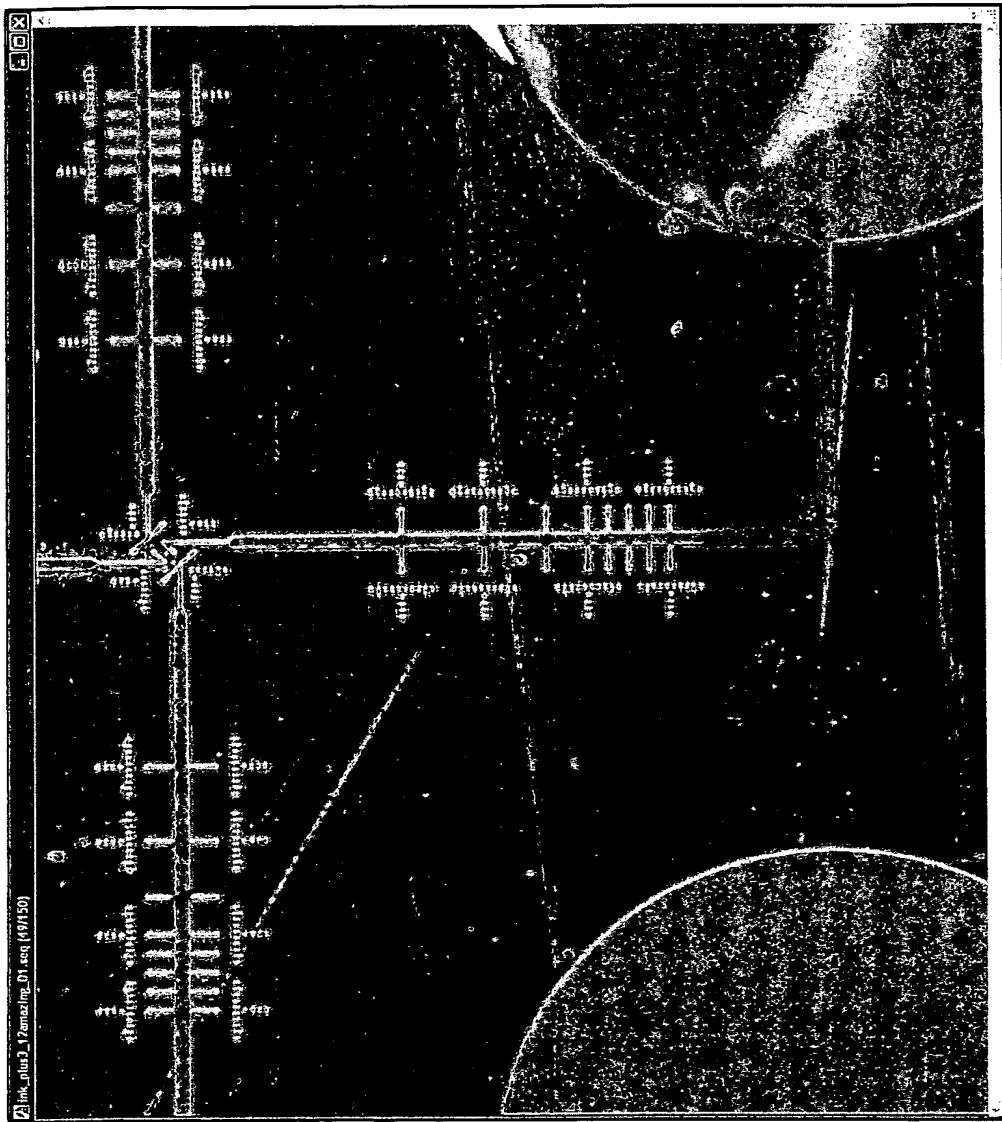
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*Fig. 32*



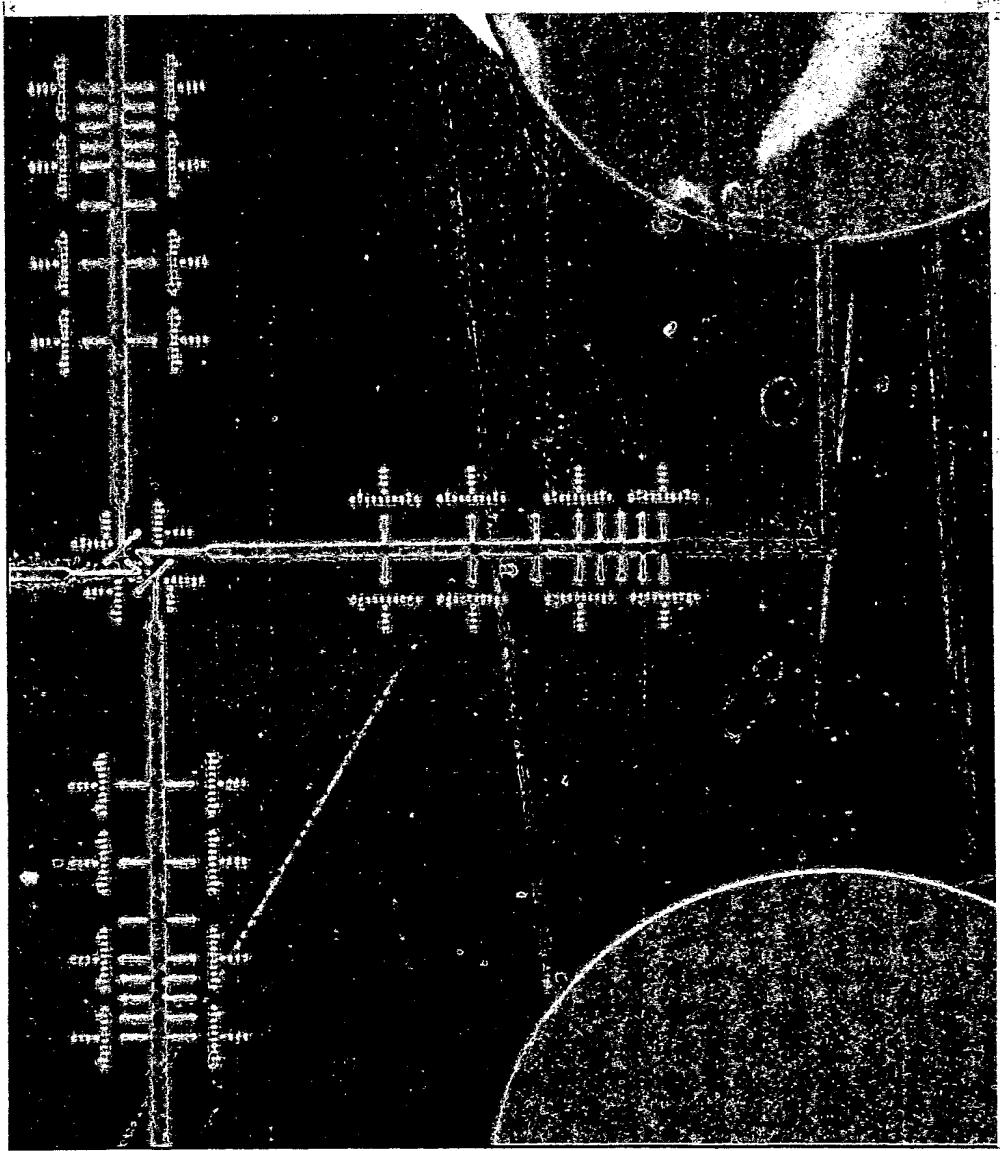
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Fig. 33



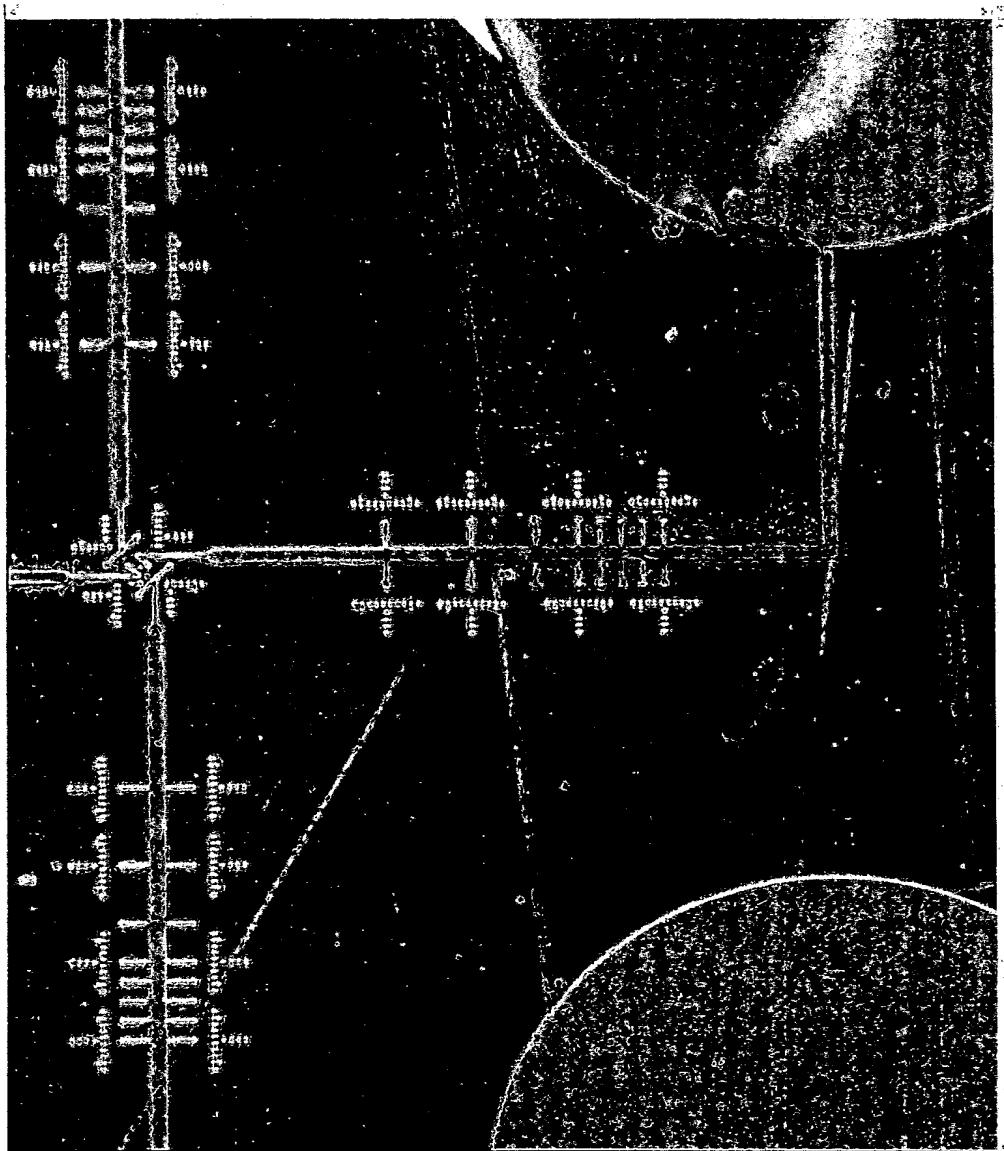
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Fig. 34



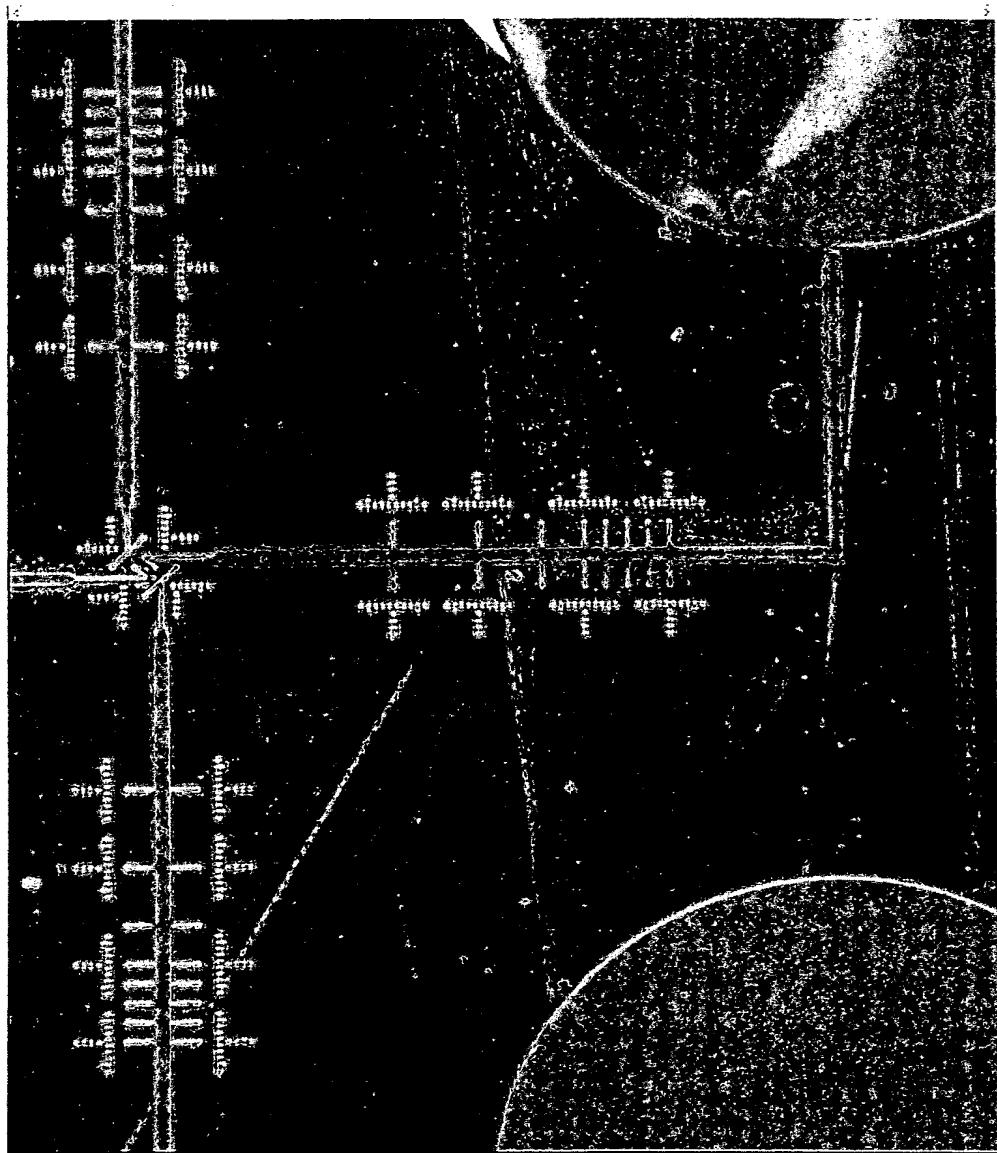
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Fig. 35

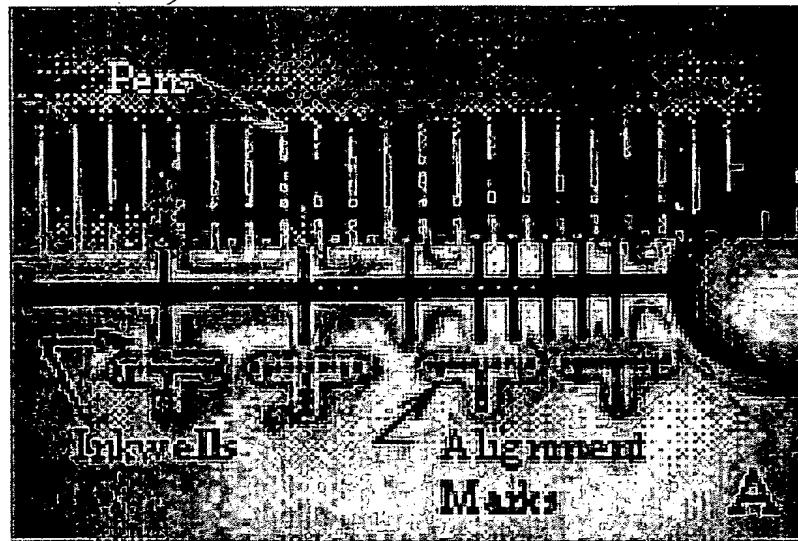


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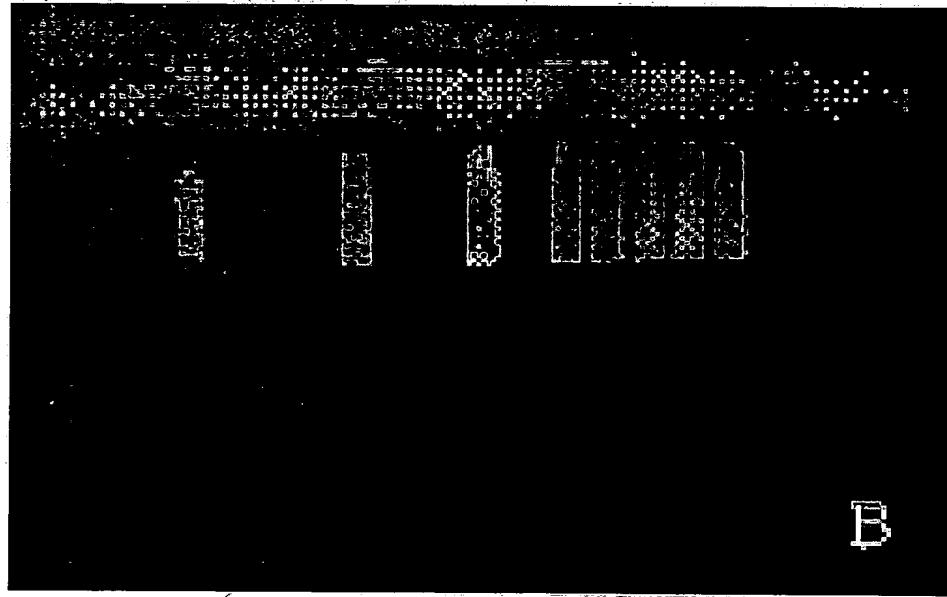
Fig. 36



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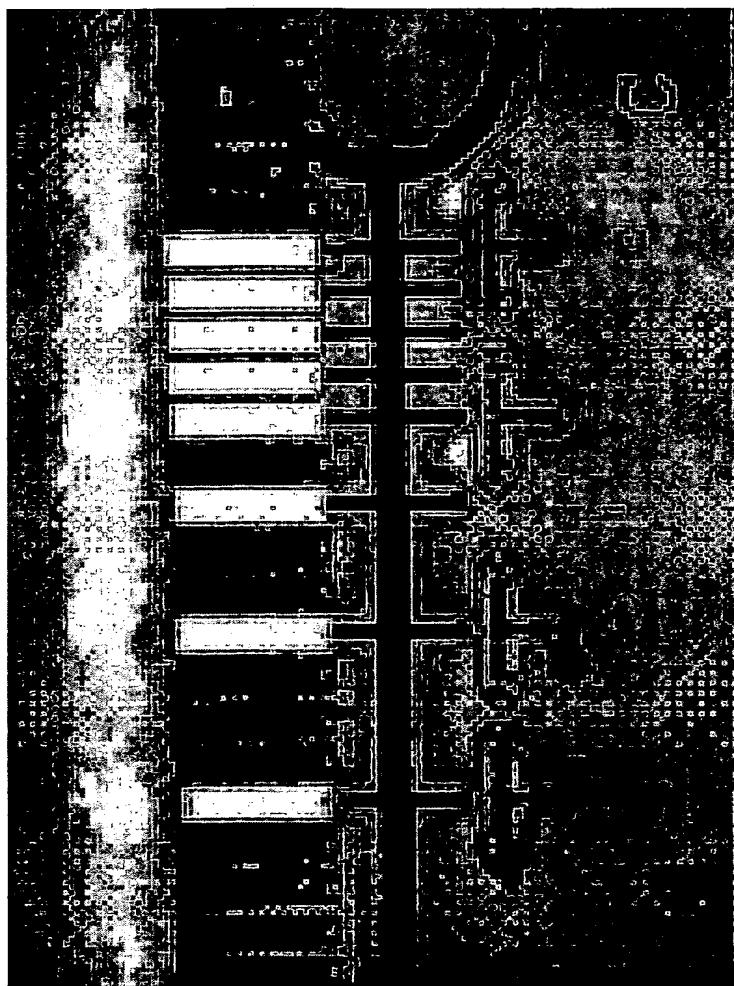


*Fig. 37A*



*Fig. 37B*

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*Fig. 37C*

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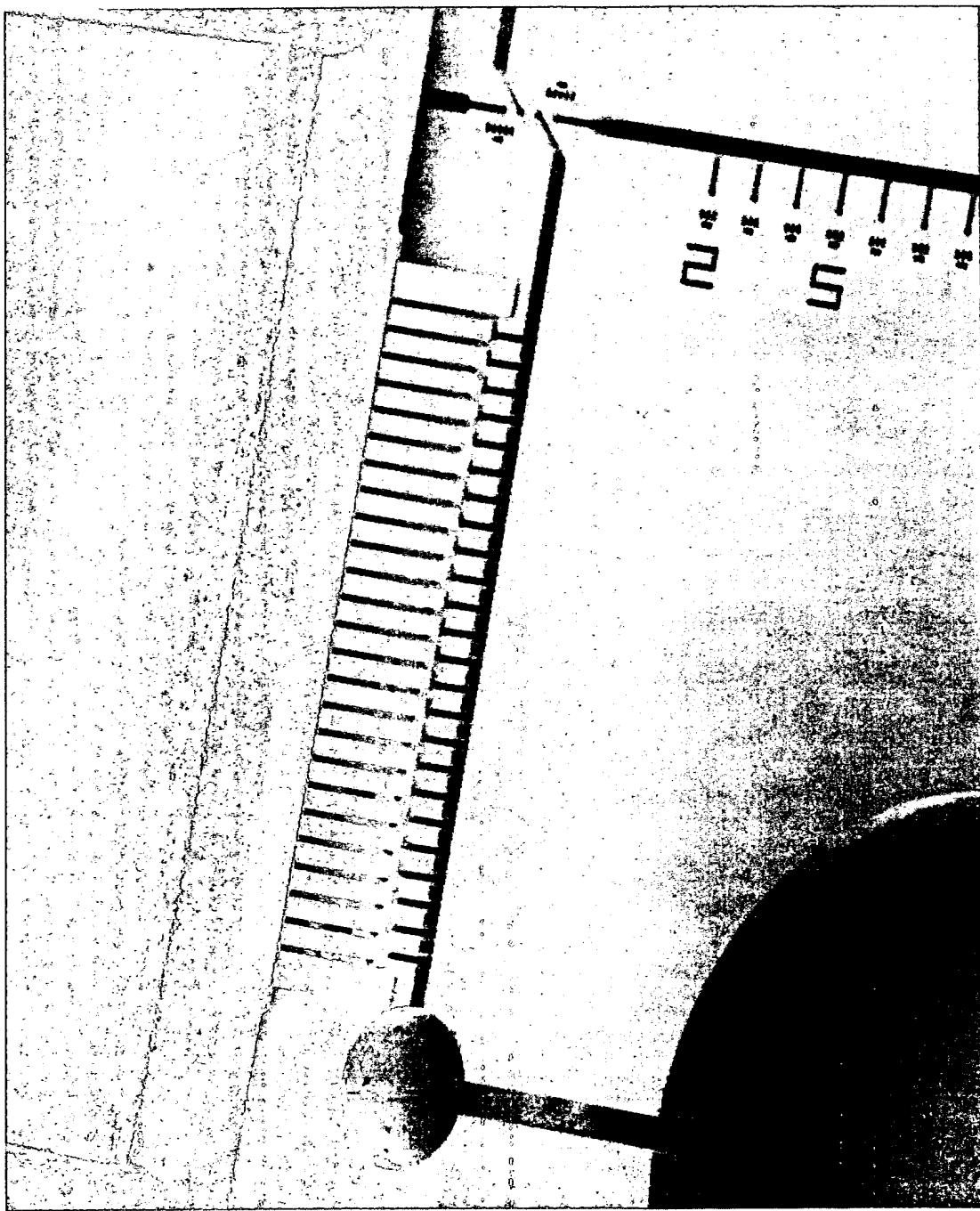
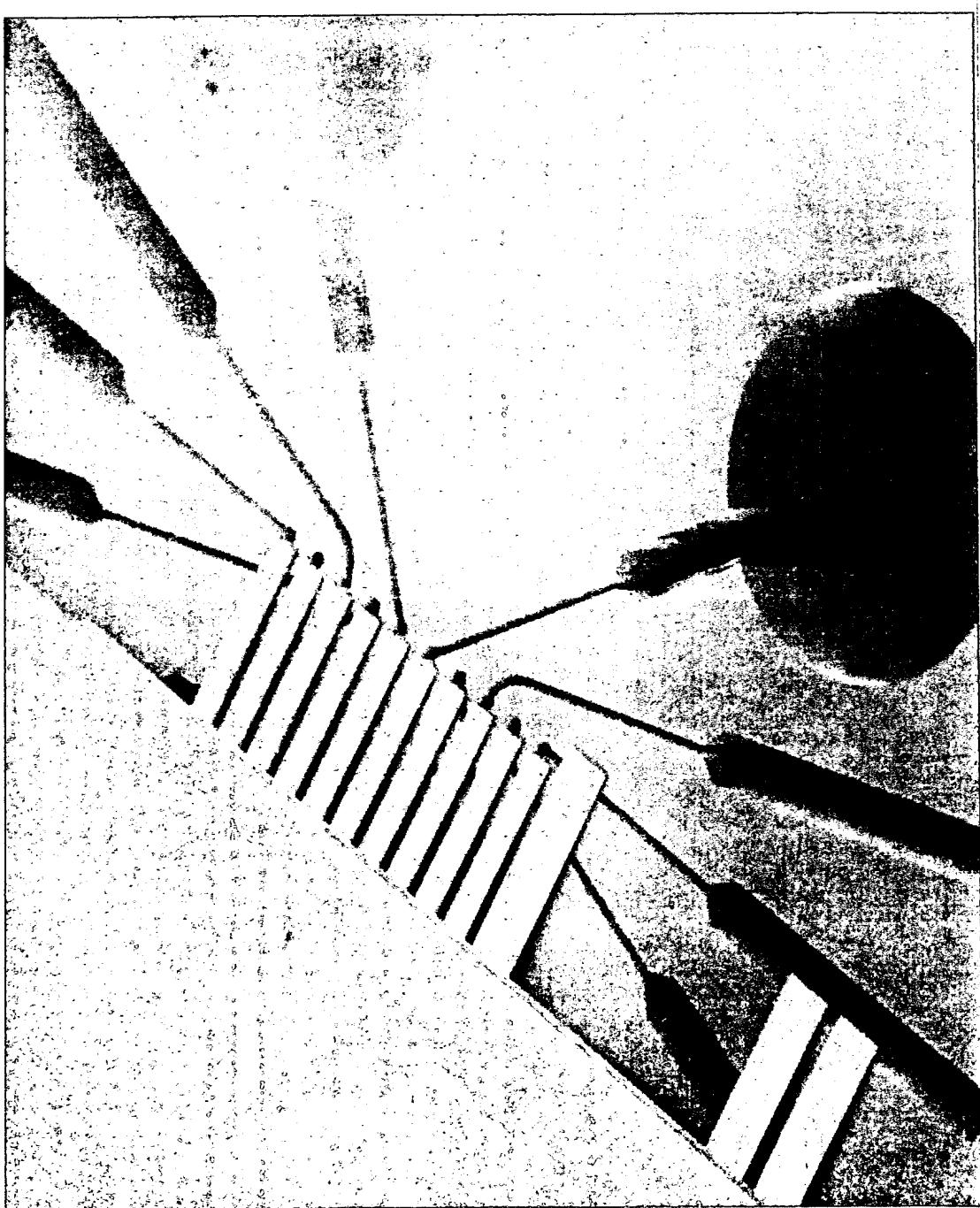


Fig. 38

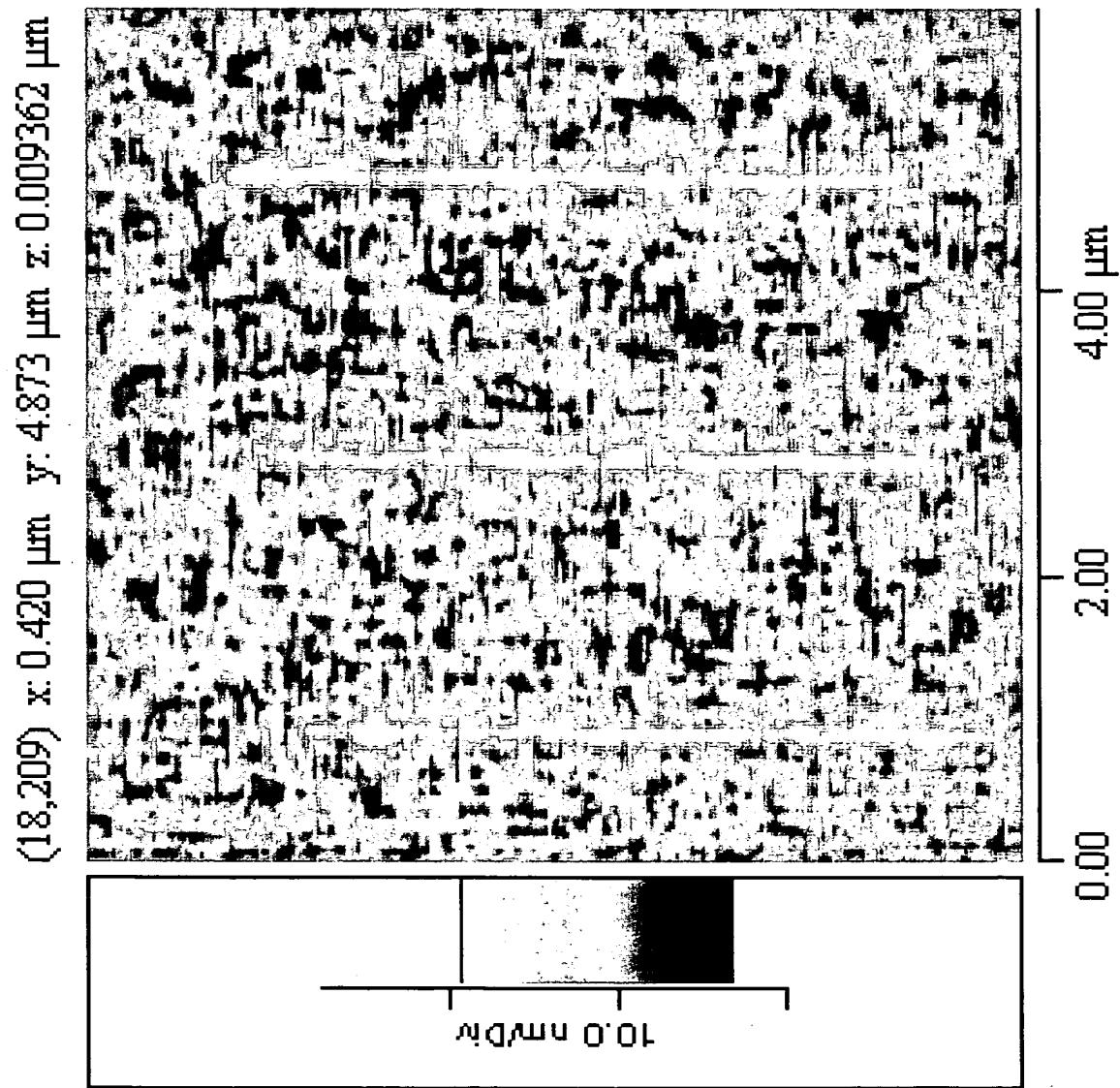
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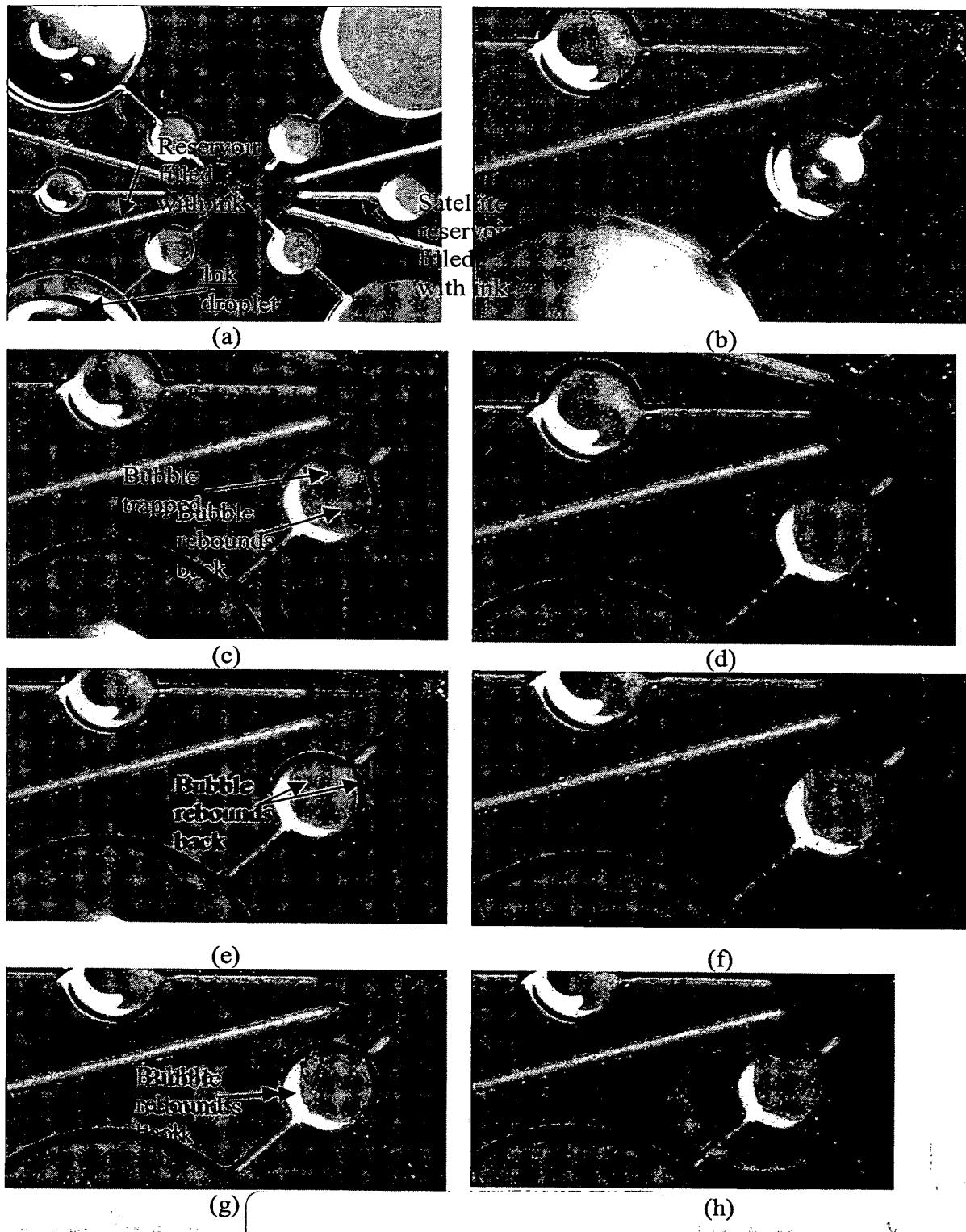


*Fig. 39*

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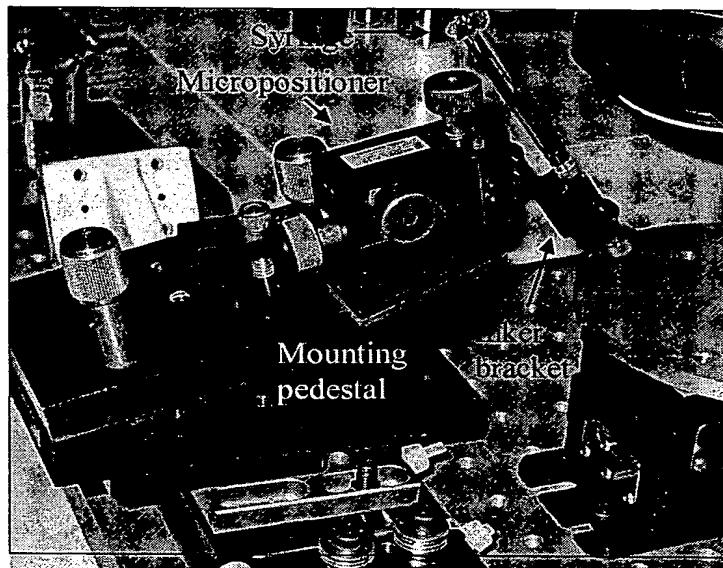
Fig. 40



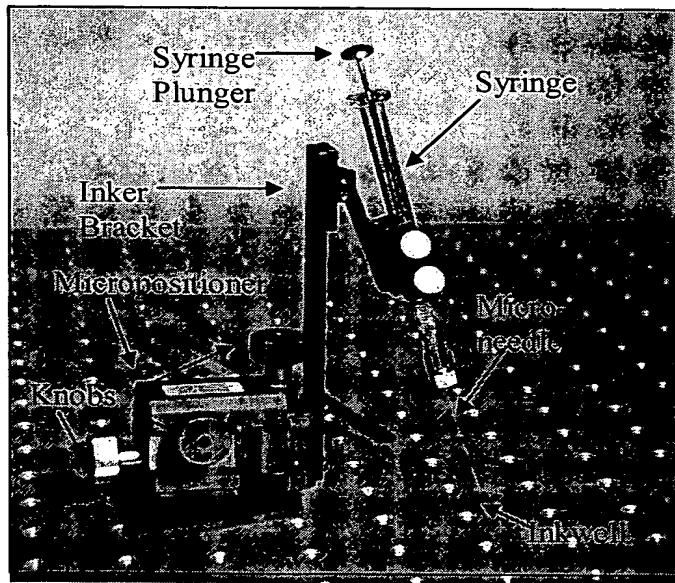


*Fig. 41*

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*Fig. 42*



*Fig. 43*